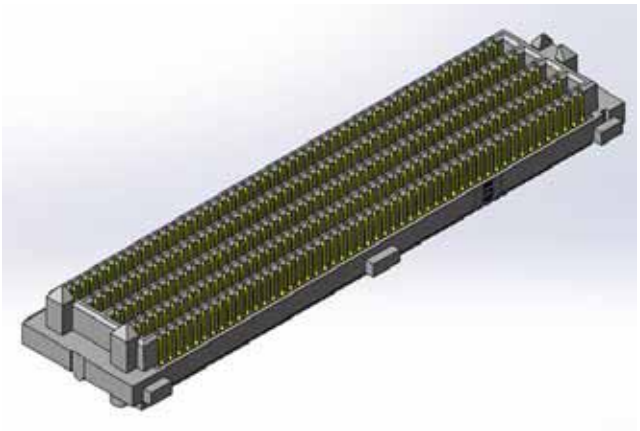
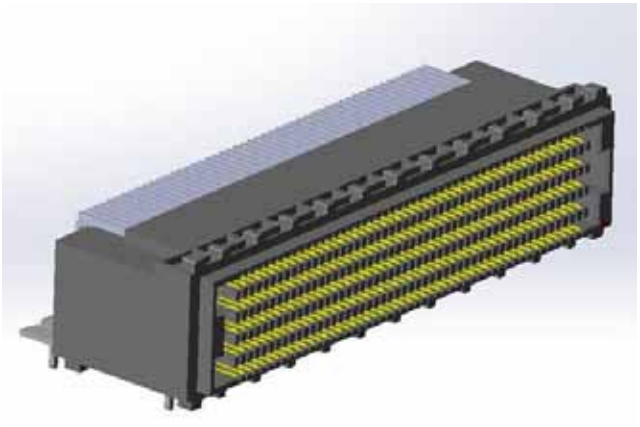
High Speed Characterization Report

SEAM8-XX-S02.0-S-10-2



Mates with

SEAF8-XX-1-S-10-2-RA



Description:
Open Pin Field Array, 0.8mm x 0.8mm Pitch
Vertical Array to Right Angle

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Report Revision: 10/24/2016

Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

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Connector Overview

SEAM8/SEAF8-RA series is a 0.8mm x 0.8mm pitch interconnects system for high-speed board-to-board applications. The open pin field design is suitable for Fiber Channel, Rapid I/O, PCIe, SATA and Infiniband data rates. The SEAM8/SEAF8-RA Series is available in 4, 6, 8, and 10 row open pin field arrays. Pins per row selections are 20, 30, 40, or 50. This report reflects only the hi-speed electrical characteristics specific to a mated 20-50 contacts/row, 4-10 rows, SEAM8/SEAF8-RA test system.

Connector System Speed Rating

SEAM8/ SEAF8-RA Series, 0.8mm x 0.8mm pitch interconnect	
Signaling	Speed Rating
Single-Ended: 1:1 S/G, row A	**17 GHz/ 34Gbps**
Single-Ended: 1:1 S/G, row C	**14 GHz/ 28Gbps**
Single-Ended: 1:1 S/G, row D	**18 GHz/ 36Gbps**
Single-Ended: 1:1 S/G, row F	**13.5 GHz/ 27Gbps**
Single-Ended: 1:1 S/G, row H	**12.5 GHz/ 25Gbps**
Single-Ended: 1:1 S/G, row K	**14 GHz/ 28Gbps**
Single-Ended: 2:1 S/G, row A	**16 GHz/ 32Gbps**
Single-Ended: 2:1 S/G, row B	**14.5 GHz/ 29Gbps**
Single-Ended: 2:1 S/G, row C	**14.5 GHz/ 29Gbps**
Single-Ended: 2:1 S/G, row H	**14 GHz/ 28Gbps**
Single-Ended: 2:1 S/G, row J	**15 GHz/ 30Gbps**
Single-Ended: 2:1 S/G, row K	**12 GHz/ 24Gbps**
Differential: Optimal Horizontal, row A	**18 GHz/ 36Gbps**
Differential: Optimal Horizontal, row B	**14.5 GHz/ 29Gbps**
Differential: Optimal Horizontal, row C	**13 GHz/ 26Gbps**

Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Differential: Optimal Horizontal, row H	**12 GHz/ 24Gbps**
Differential: Optimal Horizontal, row J	**7.5 GHz/ 15Gbps**
Differential: Optimal Horizontal, row K	**12 GHz/ 24Gbps**
Differential: Optimal Vertical, row A,B	**14.5 GHz/ 29Gbps**
Differential: Optimal Vertical, row B,C	**14.5 GHz/ 29Gbps**
Differential: Optimal Vertical, row D,E	**12.5 GHz/ 25Gbps**
Differential: Optimal Vertical, row E,F	**14 GHz/ 28Gbps**
Differential: Optimal Vertical, row H,J	**13.5 GHz/ 27Gbps**
Differential: Optimal Vertical, row J,K	**10.5 GHz/ 21Gbps**
Differential: High Density Vertical, row A,B	**13.5 GHz/ 27Gbps**
Differential: High Density Vertical, row B,C	**13.5 GHz/ 27Gbps**
Differential: High Density Vertical, row D,E	**12.5 GHz/ 25Gbps**
Differential: High Density Vertical, row F,G	**12.5 GHz/ 25Gbps**
Differential: High Density Vertical, row H,J	**12 GHz/ 24Gbps**
Differential: High Density Vertical, row J,K	**14 GHz/ 28Gbps**

The Speed Rating is based on the -3 dB insertion loss point of the connector system. The -3 dB point can be used to estimate usable system bandwidth in a typical, two-level signaling environment.

To calculate the Speed Rating, the measured -3 dB point is rounded up to the nearest half-GHz level. The up-rounding corrects for a portion of the test board's trace loss, since a short length of trace loss is included in the loss data in this report. The resulting loss value is then doubled to determine the approximate maximum data rate in Gigabits per second (Gbps).

For example, a connector with a -3 dB point of 7.8 GHz would have a Speed Rating of 8 GHz/ 16 Gbps. A connector with a -3 dB point of 7.2 GHz would have a Speed Rating of 7.5 GHz/15 Gbps.

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Frequency Domain Data Summary

Table 1 - Single-Ended 1:1 S/G Pattern Performance			
Test Parameter	**Driver**	**Receiver**	
Insertion Loss	SEAM8_A26	SEAF8-RA_A26	<-3dB to 16.58 GHz
	SEAM8_C26	SEAF8-RA_C26	<-3dB to 13.55 GHz
	SEAM8_D27	SEAF8-RA_D27	<-3dB to 17.59 GHz
	SEAM8_F27	SEAF8-RA_F27	<-3dB to 13.44 GHz
	SEAM8_H25	SEAF8-RA_H25	<-3dB to 12.08 GHz
	SEAM8_K25	SEAF8-RA_K25	<-3dB to 13.78 GHz
Return Loss	SEAM8_A26	SEAM8_A26	>10dB to 7.11 GHz
	SEAM8_C26	SEAM8_C26	>10dB to 8.46 GHz
	SEAM8_D27	SEAM8_D27	>10dB to 10.51 GHz
	SEAM8_F27	SEAM8_F27	>10dB to 8.56 GHz
	SEAM8_H25	SEAM8_H25	>10dB to 7.46 GHz
	SEAM8_K25	SEAM8_K25	>10dB to 10.40 GHz
Near-End Crosstalk	SEAM8_A26	SEAM8_A24	<-20dB to 19.08 GHz
	SEAM8_A26	SEAM8_C26	<-20dB to 20 GHz
	SEAM8_D27	SEAM8_D25	<-20dB to 20 GHz
	SEAM8_D27	SEAM8_F27	<-20dB to 20 GHz
	SEAM8_K25	SEAM8_K27	<-20dB to 14.98 GHz
	SEAM8_K25	SEAM8_H25	<-20dB to 17.79 GHz
Far-End Crosstalk	SEAM8_A26	SEAF8-RA_A24	<-20dB to 14.54 GHz
	SEAM8_A26	SEAF8-RA_C26	<-20dB to 20 GHz
	SEAM8_D27	SEAF8-RA_D25	<-20dB to 20 GHz
	SEAM8_D27	SEAF8-RA_F27	<-20dB to 20 GHz
	SEAM8_K25	SEAF8-RA_K27	<-20dB to 9.9 GHz
	SEAM8_K25	SEAF8-RA_H25	<-20dB to 11.16 GHz

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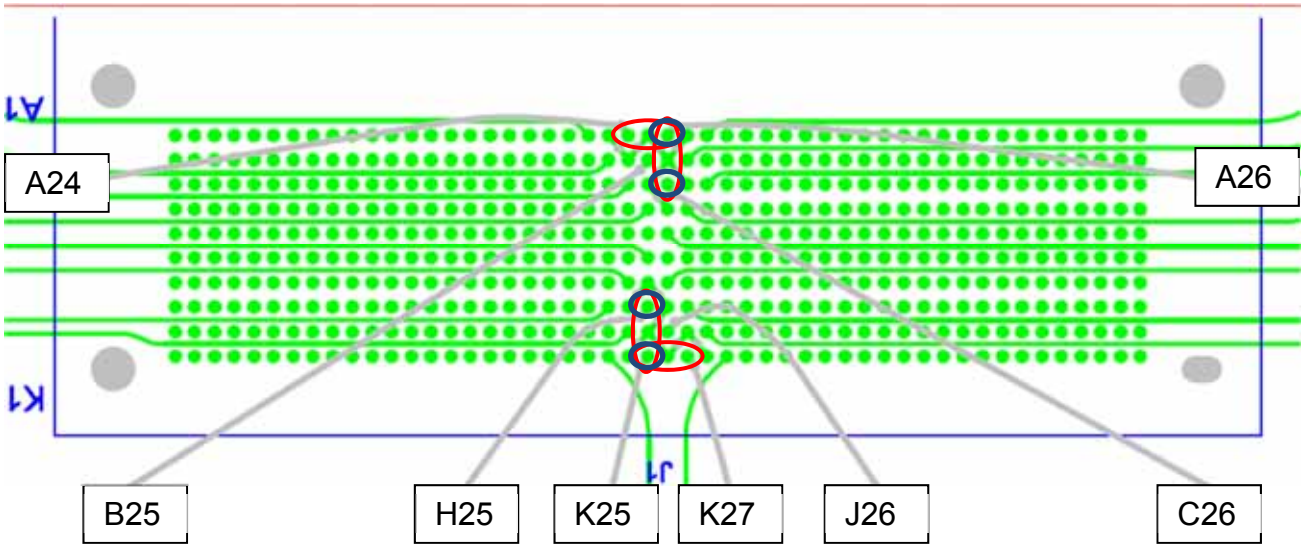
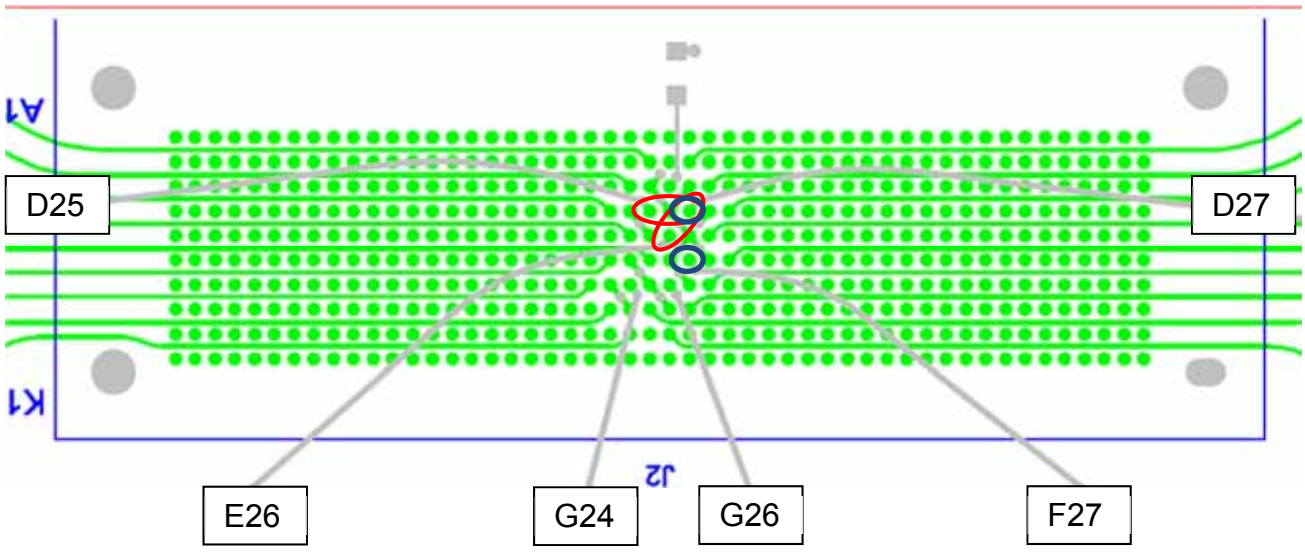
Single-Ended 1:1 S/G Pattern Pin Map





SEAF8_RA

Insertion Loss & Return Loss

Crosstalk

Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Table 2 - Single-Ended 2:1 S/G Pattern Performance			
Test Parameter	**Driver**	**Receiver**	
Insertion Loss	SEAM8_A27	SEAF8-RA_A27	<-3dB to 15.51 GHz
	SEAM8_B27	SEAF8-RA_B27	<-3dB to 14.05 GHz
	SEAM8_C28	SEAF8-RA_C28	<-3dB to 14.08 GHz
	SEAM8_H22	SEAF8-RA_H22	<-3dB to 13.78 GHz
	SEAM8_J23	SEAF8-RA_J23	<-3dB to 14.59 GHz
	SEAM8_K23	SEAF8-RA_K23	<-3dB to 11.96 GHz
Return Loss	SEAM8_A27	SEAM8_A27	>10dB to 11.73 GHz
	SEAM8_B27	SEAM8_B27	>10dB to 10.26 GHz
	SEAM8_C28	SEAM8_C28	>10dB to 10.68 GHz
	SEAM8_H22	SEAM8_H22	>10dB to 11.93 GHz
	SEAM8_J23	SEAM8_J23	>10dB to 7.04 GHz
	SEAM8_K23	SEAM8_K23	>10dB to 10.46 GHz
Near-End Crosstalk	SEAM8_A27	SEAM8_A26	<-20dB to 0.65 GHz
	SEAM8_A27	SEAM8_B27	<-20dB to 1.80 GHz
	SEAM8_B27	SEAM8_C28	<-20dB to 20 GHz
	SEAM8_K23	SEAM8_K24	<-20dB to 0.33 GHz
	SEAM8_K23	SEAM8_J23	<-20dB to 0.63 GHz
	SEAM8_H22	SEAM8_J23	<-20dB to 20 GHz
Far-End Crosstalk	SEAM8_A27	SEAF8-RA_A26	<-20dB to 2.3 GHz
	SEAM8_A27	SEAF8-RA_B27	<-20dB to 13.03 GHz
	SEAM8_B27	SEAF8-RA_C28	<-20dB to 18.10 GHz
	SEAM8_K23	SEAF8-RA_K24	<-20dB to 3.68 GHz
	SEAM8_K23	SEAF8-RA_J23	<-20dB to 20 GHz
	SEAM8_H22	SEAF8-RA_J23	<-20dB to 20 GHz

Series: SEAM8/SEAF8-RA Array Series
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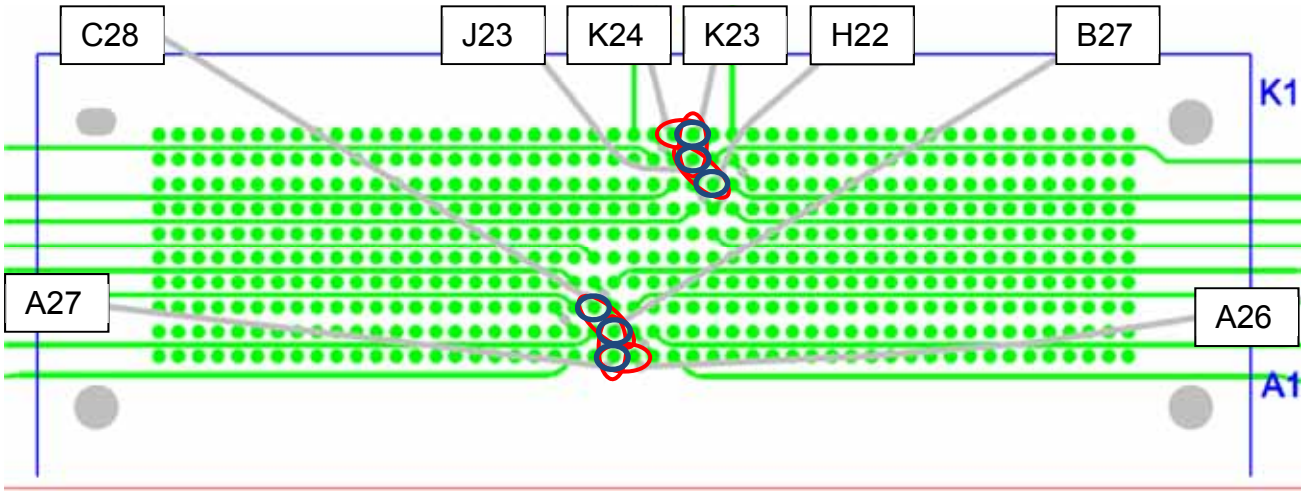
Single-Ended 2:1 S/G Pattern Pin Map



SEAF8_RA

Insertion Loss & Return Loss

Crosstalk

Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Table 3 - Differential Optimal Horizontal Performance

Test Parameter	Driver	Receiver	
Insertion Loss	SEAM8_A27,A28	SEAF8-RA_A27,A28	<-3dB to 17.88 GHz
	SEAM8_B25,B26	SEAF8-RA_B25,B26	<-3dB to 14.45 GHz
	SEAM8_C27,C28	SEAF8-RA_C27,C28	<-3dB to 12.60 GHz
	SEAM8_H25,H26	SEAF8-RA_H25,H26	<-3dB to 11.63 GHz
	SEAM8_J23,J24	SEAF8-RA_J23,J24	<-3dB to 7.28 GHz
	SEAM8_K25,K26	SEAF8-RA_K25,K26	<-3dB to 11.65 GHz
Return Loss	SEAM8_A27,A28	SEAM8_A27,A28	>10dB to 8.38 GHz
	SEAM8_B25,B26	SEAM8_B25,B26	>10dB to 6.43 GHz
	SEAM8_C27,C28	SEAM8_C27,C28	>10dB to 5.99 GHz
	SEAM8_H25,H26	SEAM8_H25,H26	>10dB to 6.76 GHz
	SEAM8_J23,J24	SEAM8_J23,J24	>10dB to 6.63 GHz
	SEAM8_K25,K26	SEAM8_K25,K26	>10dB to 7.78 GHz
Near-End Crosstalk	SEAM8_A27,A28	SEAM8_A23,A24	<-20dB to 20 GHz
	SEAM8_A27,A28	SEAM8_C27,C28	<-20dB to 20 GHz
	SEAM8_B25,B26	SEAM8_C27,C28	<-20dB to 20 GHz
	SEAM8_K25,K26	SEAM8_K21,K22	<-20dB to 20 GHz
	SEAM8_K25,K26	SEAM8_H25,H26	<-20dB to 11.66 GHz
	SEAM8_H25,H26	SEAM8_J23,J24	<-20dB to 20 GHz
	SEAM8_A27,A28	SEAM8_A23,A24	<-20dB to 20 GHz
Far-End Crosstalk	SEAM8_A27,A28	SEAF8-RA_C27,C28	<-20dB to 20 GHz
	SEAM8_B25,B26	SEAF8-RA_C27,C28	<-20dB to 20 GHz
	SEAM8_K25,K26	SEAF8-RA_K21,K22	<-20dB to 20 GHz
	SEAM8_K25,K26	SEAF8-RA_H25,H26	<-20dB to 7.79 GHz
	SEAM8_H25,H26	SEAF8-RA_J23,J24	<-20dB to 20 GHz
	SEAM8_A27,A28	SEAF8-RA_A27,A28	<-3dB to 17.88 GHz
	SEAM8_B25,B26	SEAF8-RA_B25,B26	<-3dB to 14.45 GHz

Series: SEAM8/SEAF8-RA Array Series
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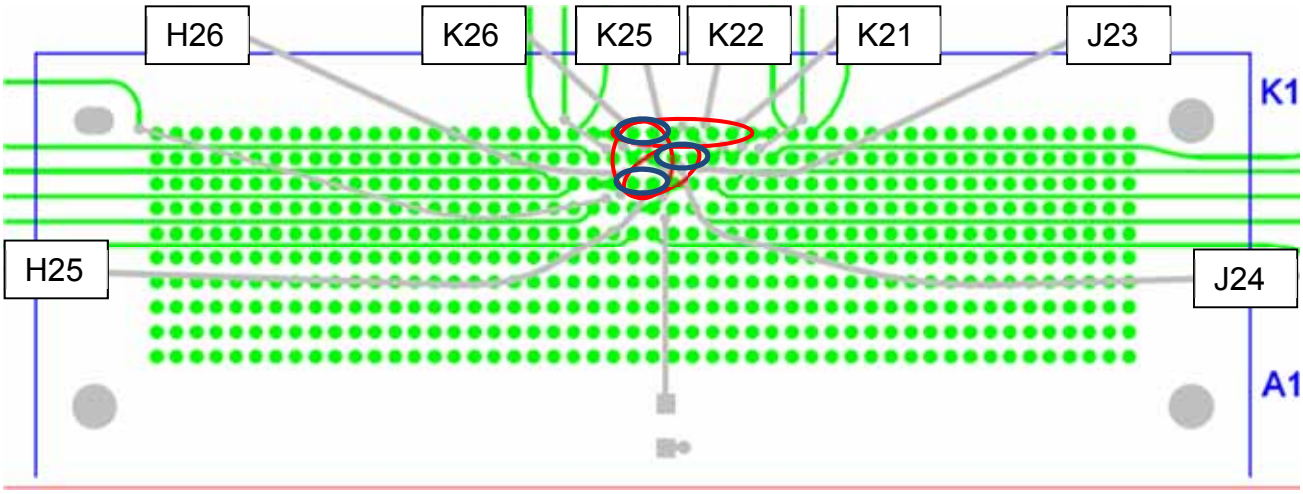
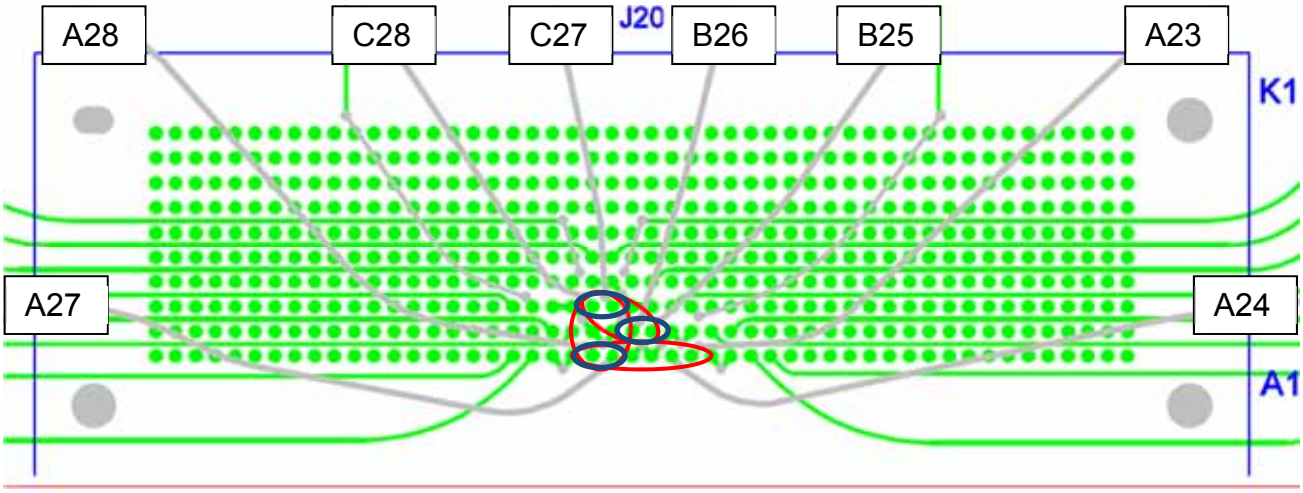
Differential Optimal Horizontal Pin Map





SEAF8_RA

Insertion Loss & Return Loss

Crosstalk

Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Table 4 - Differential Optimal Vertical Performance			
Test Parameter	**Driver**	**Receiver**	
Insertion Loss	SEAM8_A26,B26	SEAF8-RA_A26,B26	<-3dB to 14.19 GHz
	SEAM8_B25,C25	SEAF8-RA_B25,C25	<-3dB to 14.38 GHz
	SEAM8_D26,E26	SEAF8-RA_D26,E26	<-3dB to 12.10 GHz
	SEAM8_E26,F26	SEAF8-RA_E26,F26	<-3dB to 13.61 GHz
	SEAM8_H26,J26	SEAF8-RA_H26,J26	<-3dB to 13.48 GHz
	SEAM8_J26,K26	SEAF8-RA_J26,K26	<-3dB to 10.46 GHz
Return Loss	SEAM8_A26,B26	SEAM8_A26,B26	>10dB to 8.58 GHz
	SEAM8_B25,C25	SEAM8_B25,C25	>10dB to 10.90 GHz
	SEAM8_D26,E26	SEAM8_D26,E26	>10dB to 10.68 GHz
	SEAM8_E26,F26	SEAM8_E26,F26	>10dB to 8.54 GHz
	SEAM8_H26,J26	SEAM8_H26,J26	>10dB to 11.06 GHz
	SEAM8_J26,K26	SEAM8_J26,K26	>10dB to 6.90 GHz
Near-End Crosstalk	SEAM8_B25,C25	SEAM8_B27,C27	<-20dB to 20 GHz
	SEAM8_H26,J26	SEAM8_H28,J28	<-20dB to 20 GHz
	SEAM8_F25,G25	SEAM8_H24,J24	<-20dB to 20 GHz
	SEAM8_J26,K26	SEAM8_E26,F26	<-20dB to 20 GHz
	SEAM8_A26,B26	SEAM8_E26,F26	<-20dB to 20 GHz
	SEAM8_A26,B26	SEAM8_C25,D25	<-20dB to 20 GHz
Far-End Crosstalk	SEAM8_B25,C25	SEAF8-RA_B27,C27	<-20dB to 20 GHz
	SEAM8_H26,J26	SEAF8-RA_H28,J28	<-20dB to 7.44 GHz
	SEAM8_F25,G25	SEAF8-RA_H24,J24	<-20dB to 20 GHz
	SEAM8_J26,K26	SEAF8-RA_E26,F26	<-20dB to 20 GHz
	SEAM8_A26,B26	SEAF8-RA_E26,F26	<-20dB to 20 GHz
	SEAM8_A26,B26	SEAF8-RA_C25,D25	<-20dB to 20 GHz

Series: SEAM8/SEAF8-RA Array Series
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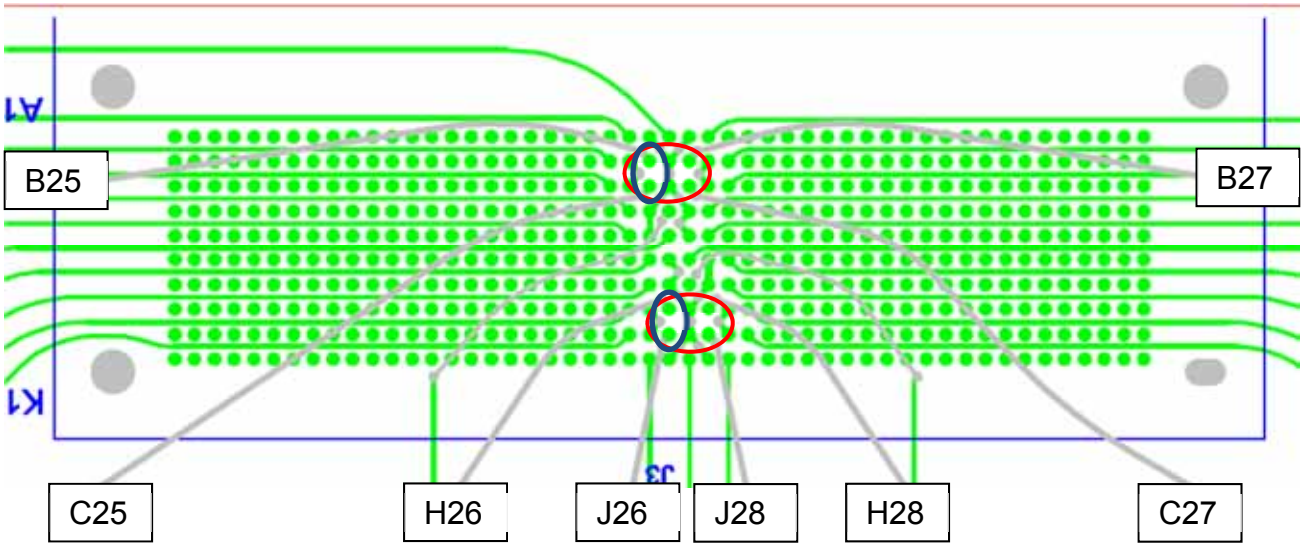
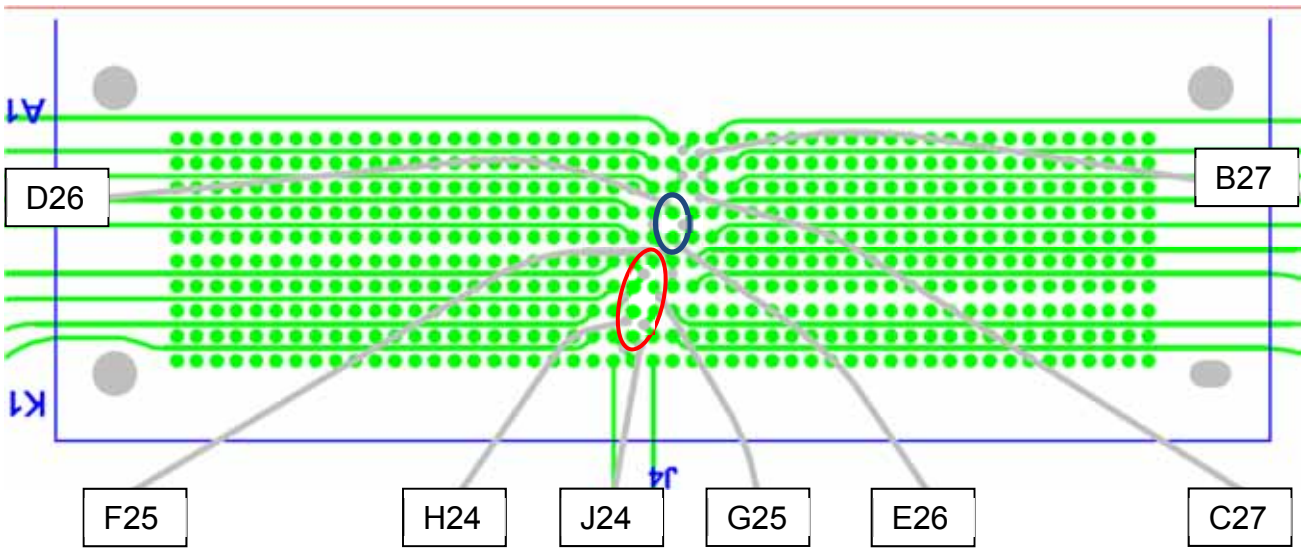
Differential Optimal Vertical Pin Map





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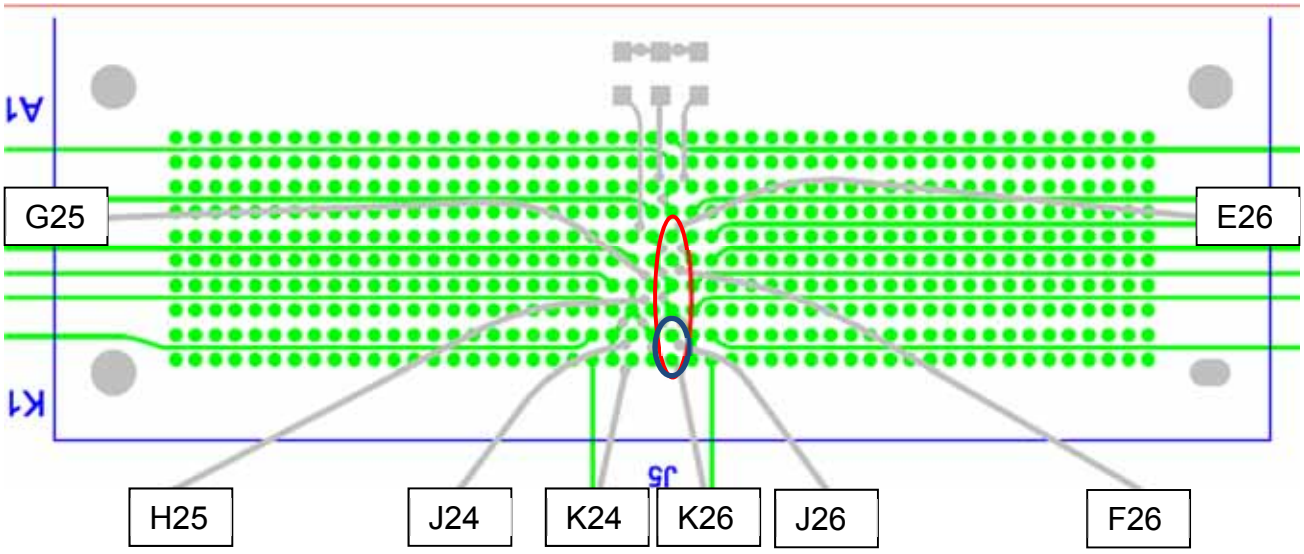
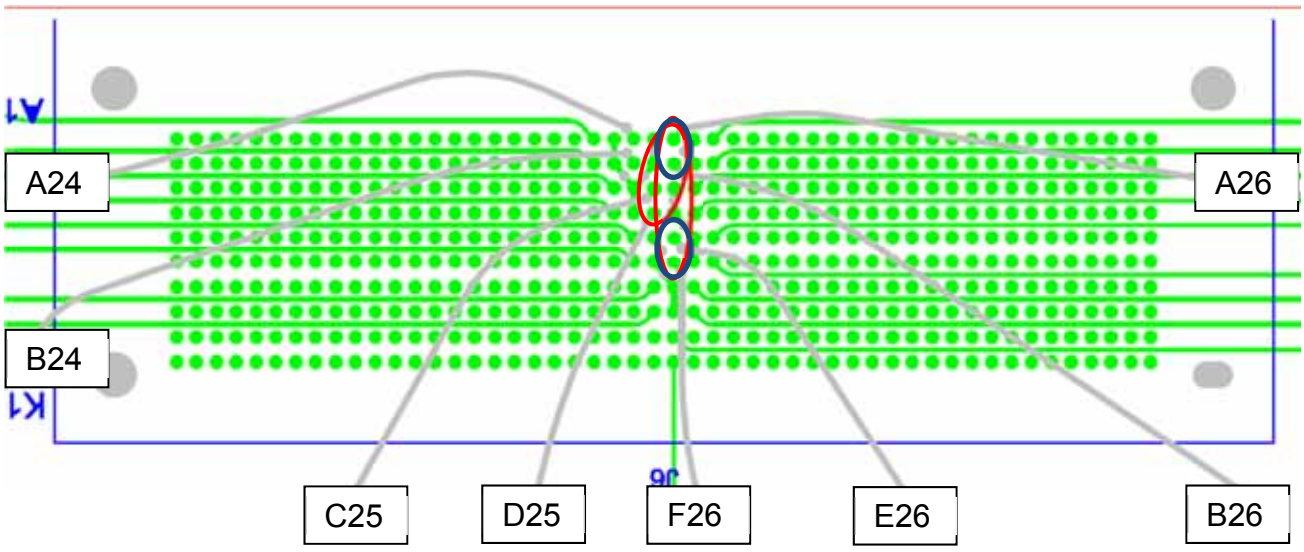




SEAF8_RA

Insertion Loss & Return Loss

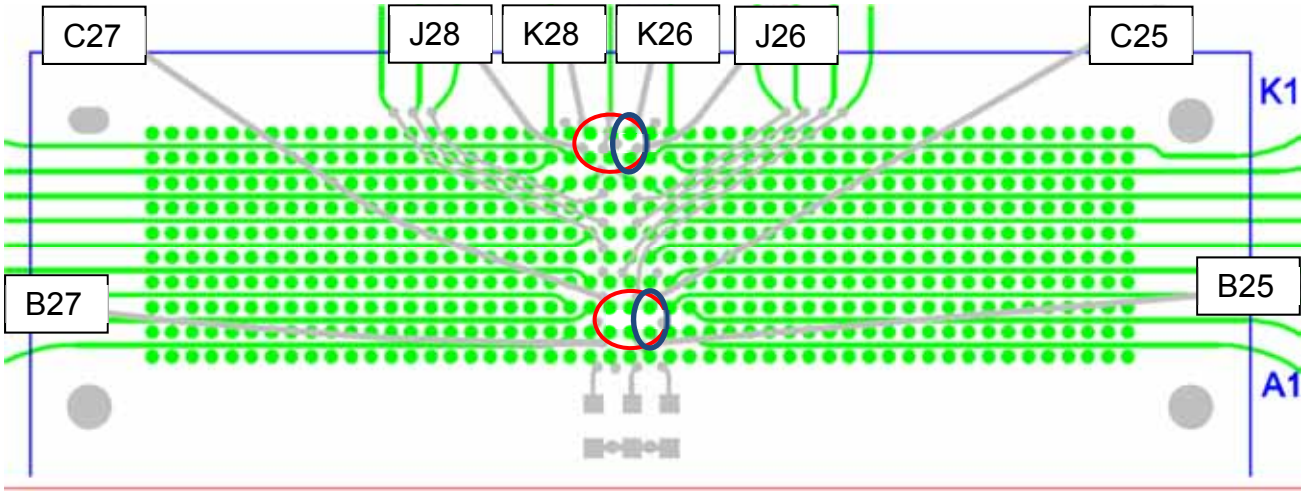
Crosstalk

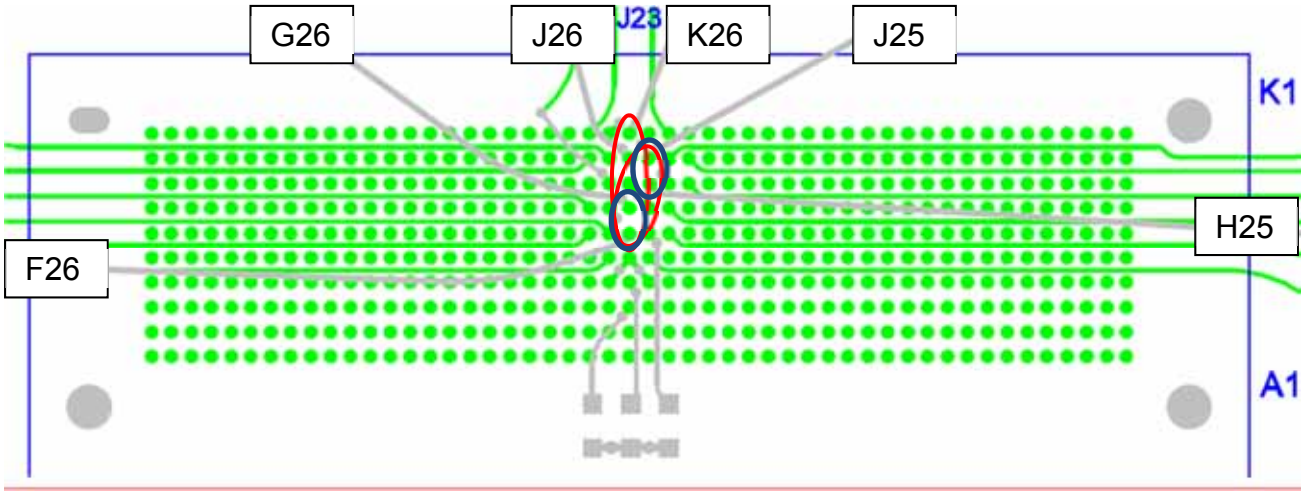
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Table 5 - Differential High Density Vertical Performance			
Test Parameter	**Driver**	**Receiver**	
Insertion Loss	SEAM8_A26,B26	SEAF8-RA_A26,B26	<-3dB to 13.31 GHz
	SEAM8_B25,C25	SEAF8-RA_B25,C25	<-3dB to 13.20 GHz
	SEAM8_D26,E26	SEAF8-RA_D26,E26	<-3dB to 12.08 GHz
	SEAM8_F26,G26	SEAF8-RA_F26,G26	<-3dB to 12.34 GHz
	SEAM8_H25,J25	SEAF8-RA_H25,J25	<-3dB to 11.78 GHz
	SEAM8_J26,K26	SEAF8-RA_J26,K26	<-3dB to 13.90 GHz
Return Loss	SEAM8_A26,B26	SEAM8_A26,B26	>10dB to 10.10 GHz
	SEAM8_B25,C25	SEAM8_B25,C25	>10dB to 12.05 GHz
	SEAM8_D26,E26	SEAM8_D26,E26	>10dB to 10.15 GHz
	SEAM8_F26,G26	SEAM8_F26,G26	>10dB to 8.63 GHz
	SEAM8_H25,J25	SEAM8_H25,J25	>10dB to 11.58 GHz
	SEAM8_J26,K26	SEAM8_J26,K26	>10dB to 10.30 GHz
Near-End Crosstalk	SEAM8_B25,C25	SEAM8_B27,C27	<-20dB to 20 GHz
	SEAM8_J26,K26	SEAM8_J28,K28	<-20dB to 20 GHz
	SEAM8_F26,G26	SEAM8_H25,J25	<-20dB to 20 GHz
	SEAM8_F26,G26	SEAM8_J26,K26	<-20dB to 20 GHz
	SEAM8_A26,B26	SEAM8_D26,E26	<-20dB to 20 GHz
	SEAM8_A26,B26	SEAM8_B25,C25	<-20dB to 16.66 GHz
Far-End Crosstalk	SEAM8_B25,C25	SEAF8-RA_B27,C27	<-20dB to 20 GHz
	SEAM8_J26,K26	SEAF8-RA_J28,K28	<-20dB to 20 GHz
	SEAM8_F26,G26	SEAF8-RA_H25,J25	<-20dB to 20 GHz
	SEAM8_F26,G26	SEAF8-RA_J26,K26	<-20dB to 20 GHz
	SEAM8_A26,B26	SEAF8-RA_D26,E26	<-20dB to 20 GHz
	SEAM8_A26,B26	SEAF8-RA_B25,C25	<-20dB to 18.34 GHz

Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Differential High Density Vertical Pin Map





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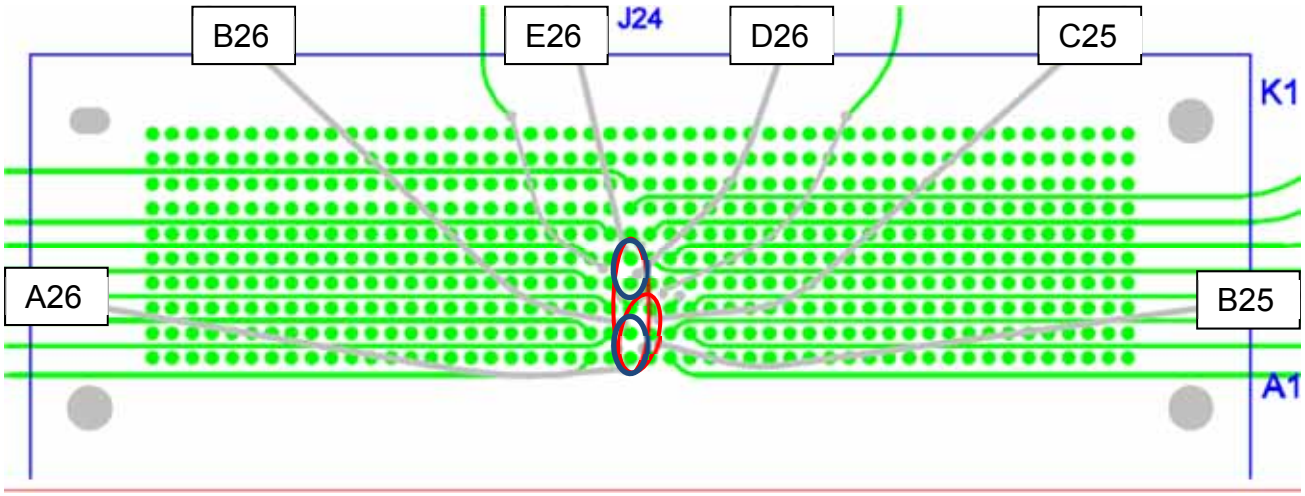


SEAF8_RA

Insertion Loss & Return Loss

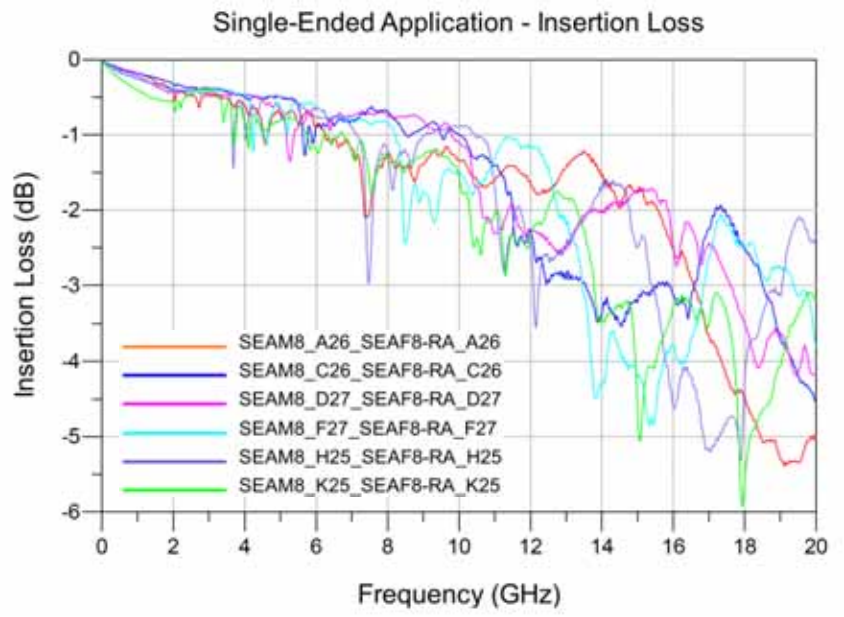
Crosstalk

Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

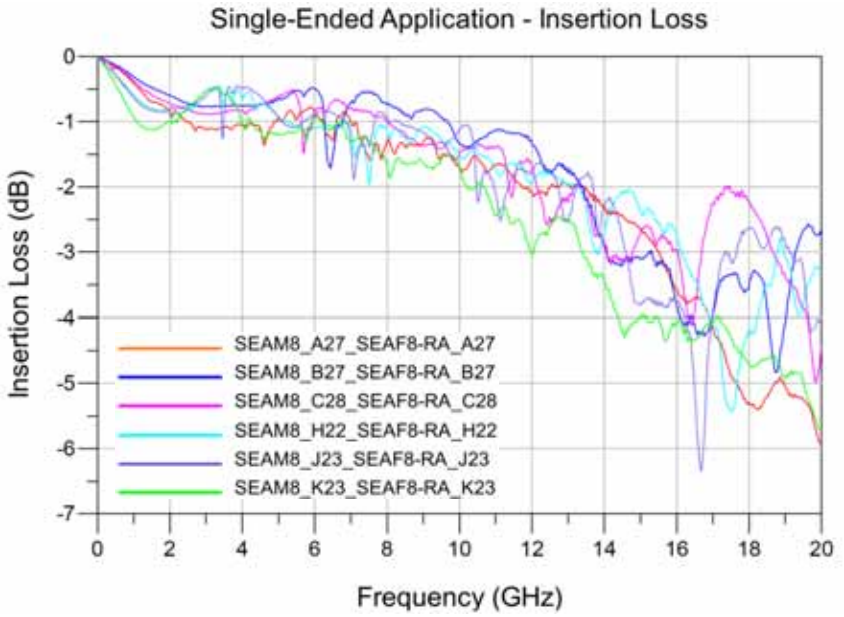
Bandwidth Charts – Single-Ended & Differential Insertion Loss

SEAM8-2mm/SEAF8-RA Array Series

Single-Ended 1:1 S/G Pattern



Single-Ended 2:1 S/G Pattern



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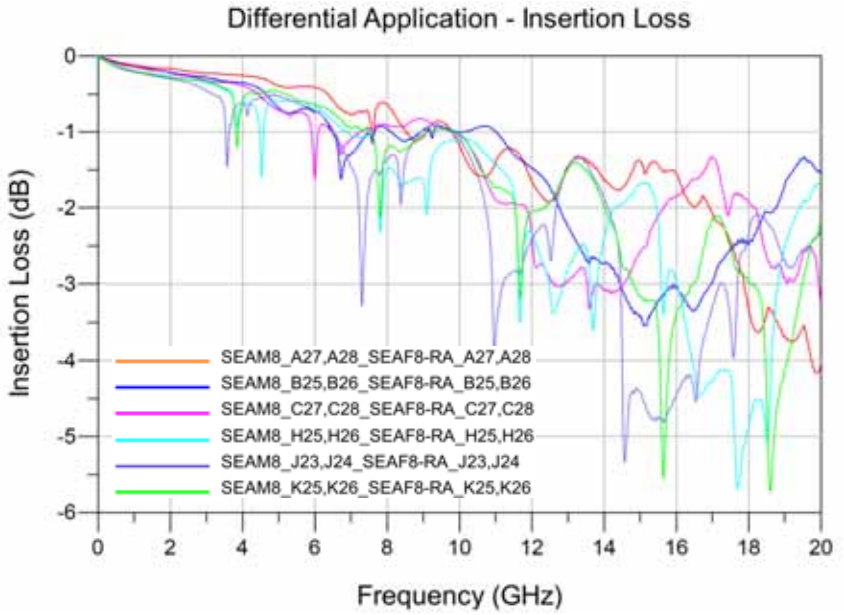
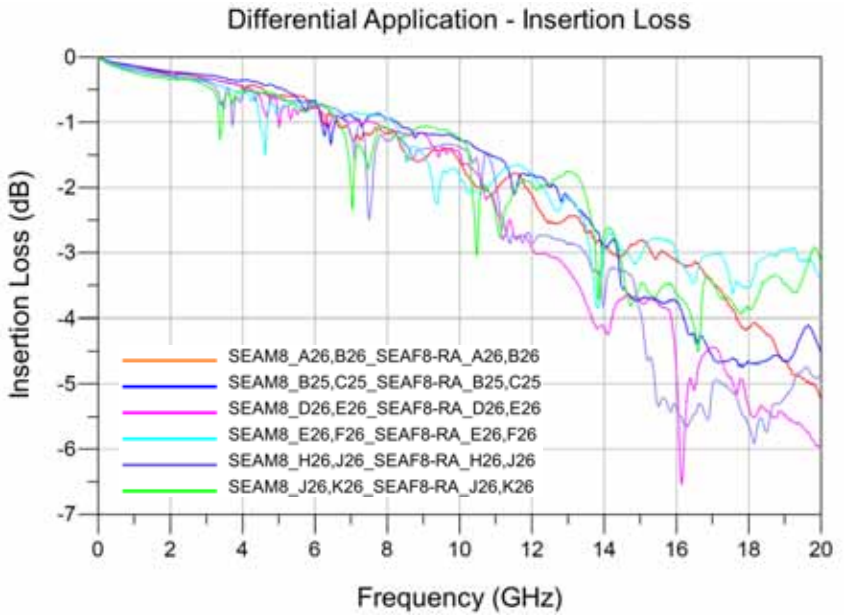
Differential Optimal Horizontal

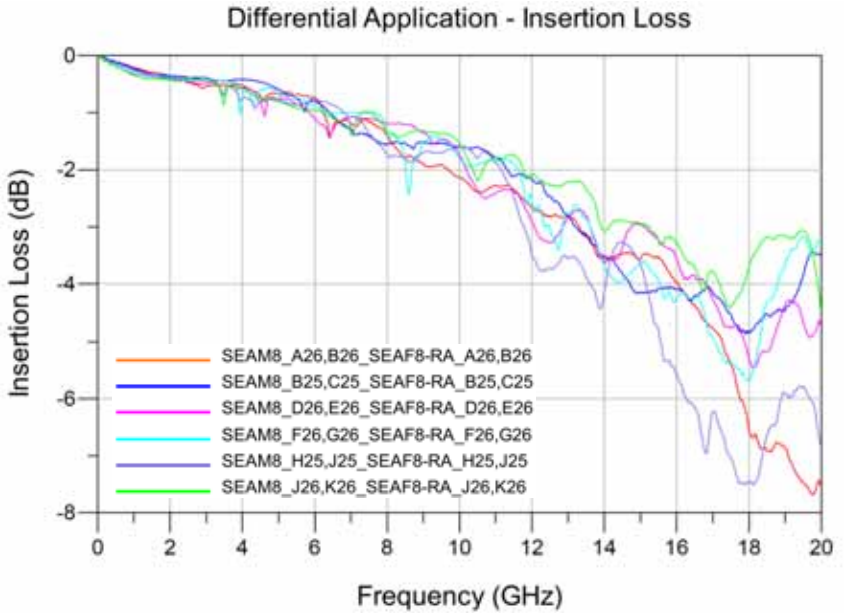


Differential Optimal Vertical



Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Differential High Density Vertical



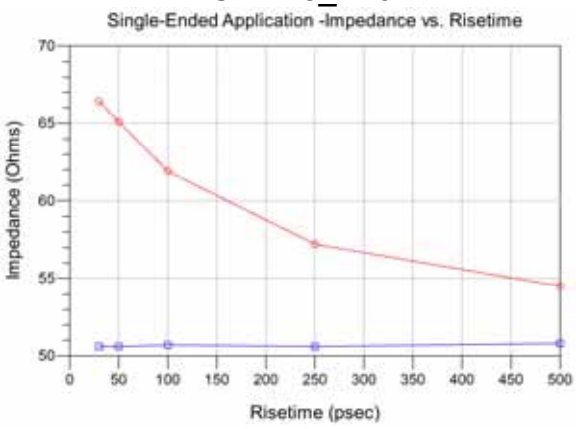
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Time Domain Data Summary

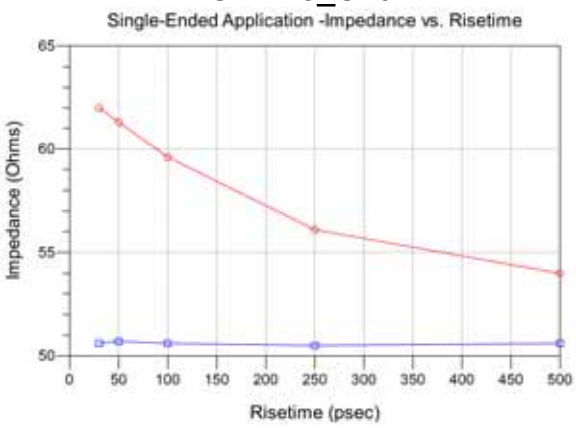
Table 6 – Single-End Impedance (Ω) – 1:1 S/G Pattern						
Driver	**Signal Risetime**	**30 ps**	**50 ps**	**100 ps**	**250 ps**	**500 ps**
SEAM8_A26	**Maximum Impedance**	66.4	65.1	61.9	57.2	54.5
	Minimum Impedance	50.6	50.6	50.7	50.6	50.8
SEAM8_C26	**Maximum Impedance**	62.0	61.3	59.6	56.1	54.0
	Minimum Impedance	50.6	50.7	50.6	50.5	50.6
SEAM8_D27	**Maximum Impedance**	61.7	61.2	60.1	56.3	53.7
	Minimum Impedance	49.5	49.5	49.6	49.7	50.1
SEAM8_F27	**Maximum Impedance**	61.5	61.0	59.9	56.8	54.3
	Minimum Impedance	49.6	49.7	49.9	50.1	50.2
SEAM8_H25	**Maximum Impedance**	61.9	61.2	59.9	57.3	55.0
	Minimum Impedance	50.6	50.7	50.6	50.5	50.6
SEAM8_K25	**Maximum Impedance**	66.8	66.0	64.3	61.6	57.9
	Minimum Impedance	50.0	50.1	50.1	50.0	50.2

Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

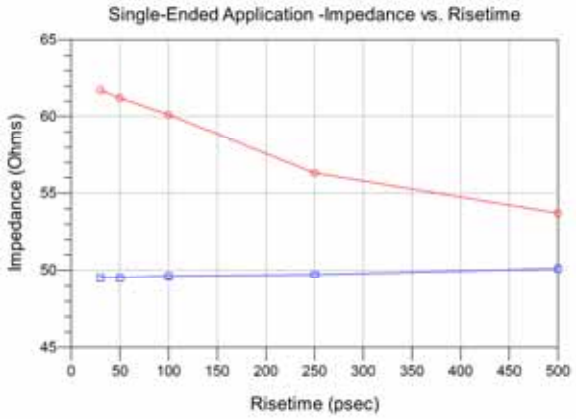
SEAM8_A26



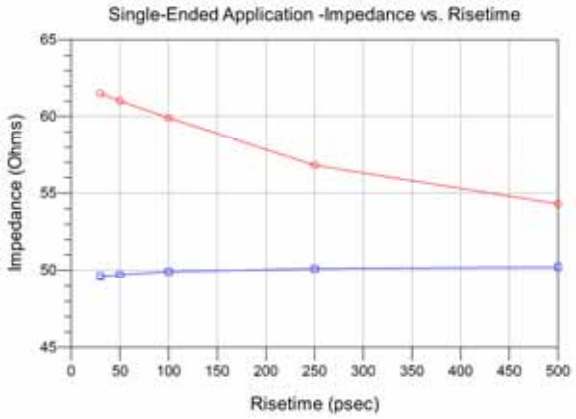
SEAM8_C26



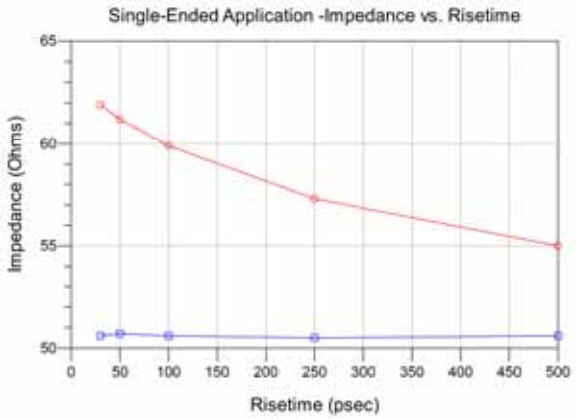
SEAM8_D27



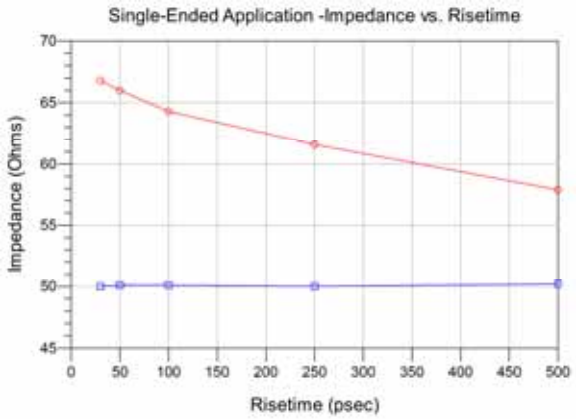
SEAM8_F27



SEAM8_H25



SEAM8_K25

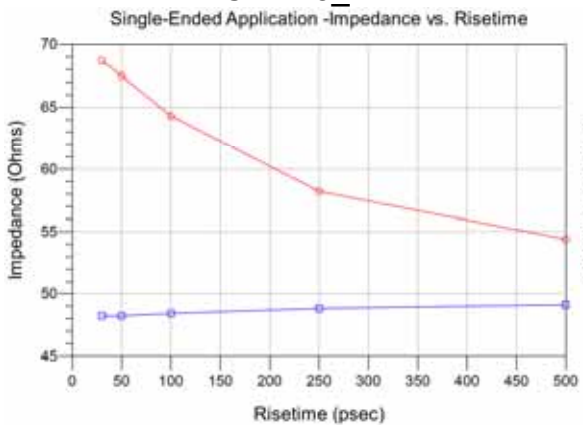


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

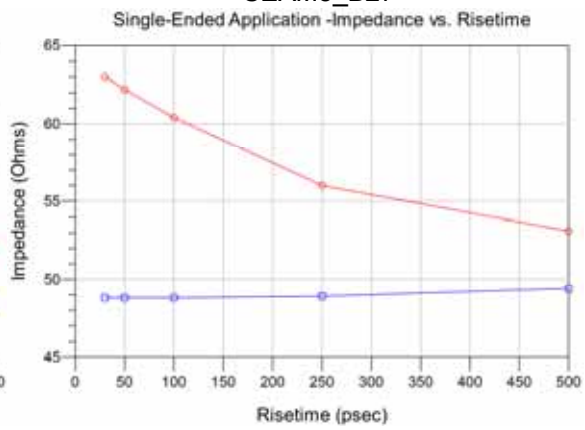
Table 7 – Single-End Impedance (Ω) – 2:1 S/G Pattern						
Driver	**Signal Risetime**	**30 ps**	**50 ps**	**100 ps**	**250 ps**	**500 ps**
SEAM8_A27	**Maximum Impedance**	68.7	67.5	64.3	58.2	54.4
	Minimum Impedance	48.2	48.2	48.4	48.8	49.1
SEAM8_B27	**Maximum Impedance**	63.0	62.2	60.4	56.0	53.1
	Minimum Impedance	48.8	48.8	48.8	48.9	49.4
SEAM8_C28	**Maximum Impedance**	63.5	62.9	61.5	57.0	53.8
	Minimum Impedance	48.7	48.7	48.8	48.9	49.5
SEAM8_H22	**Maximum Impedance**	63.9	63.3	62.1	58.9	55.4
	Minimum Impedance	49.2	49.3	49.4	49.7	49.9
SEAM8_J23	**Maximum Impedance**	63.0	62.4	61.4	58.8	55.4
	Minimum Impedance	48.7	48.7	49.0	49.4	49.8
SEAM8_K23	**Maximum Impedance**	69.0	68.2	66.7	63.8	59.0
	Minimum Impedance	48.9	49.0	49.1	49.3	49.8

Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

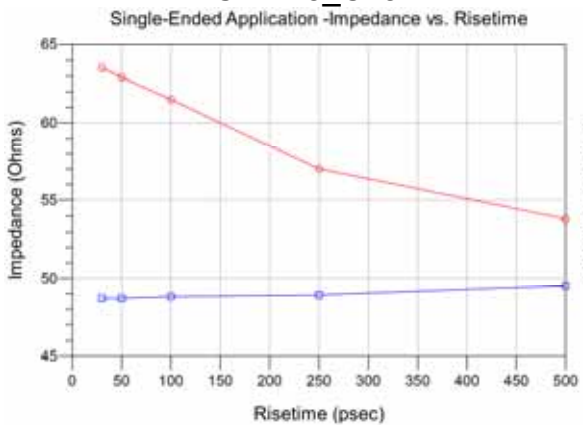
SEAM8_A27



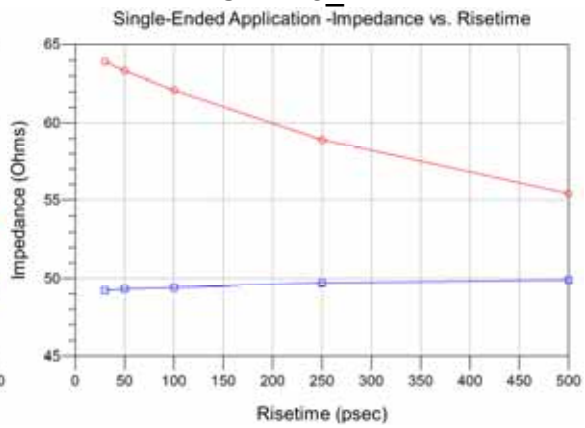
SEAM8_B27



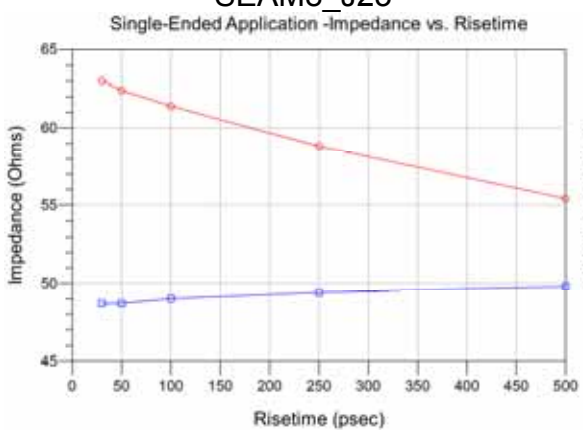
SEAM8_C28



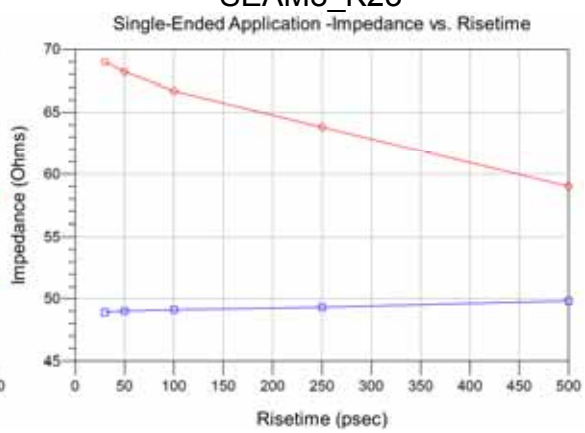
SEAM8_H22



SEAM8_J23



SEAM8_K23

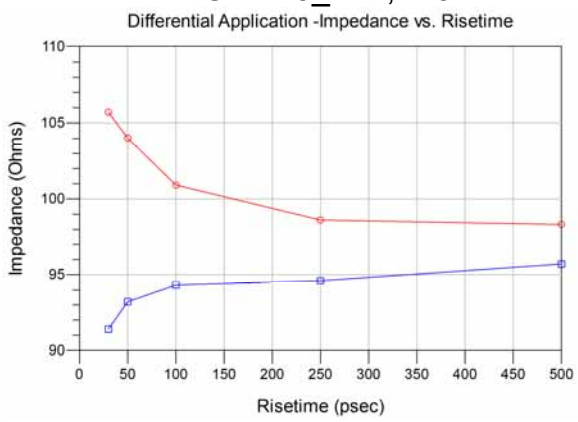


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

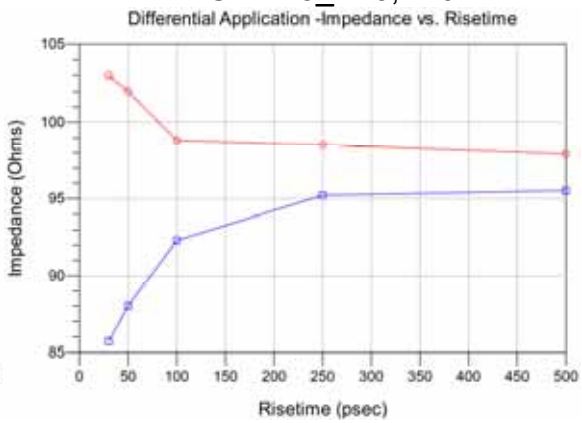
Table 8 – Differential Impedance (Ω) – Optimal Horizontal						
Driver	**Signal Risetime**	**30 ps**	**50 ps**	**100 ps**	**250 ps**	**500 ps**
SEAM8_A27,A28	**Maximum Impedance**	105.7	104.0	100.9	98.6	98.3
	Minimum Impedance	91.4	93.2	94.3	94.6	95.7
SEAM8_B25,B26	**Maximum Impedance**	103.0	102.0	98.8	98.5	97.9
	Minimum Impedance	85.7	88.0	92.3	95.2	95.5
SEAM8_C27,C28	**Maximum Impedance**	102.6	101.7	99.3	97.6	97.6
	Minimum Impedance	85.0	87.5	91.9	95.1	95.5
SEAM8_H25,H26	**Maximum Impedance**	103.6	103.0	101.5	100.7	99.7
	Minimum Impedance	87.2	89.6	94.1	98.1	98.6
SEAM8_J23,J24	**Maximum Impedance**	103.0	102.2	100.7	99.8	99.1
	Minimum Impedance	86.0	88.5	93.2	97.2	97.6
SEAM8_K25,K26	**Maximum Impedance**	106.2	105.1	103.0	100.8	100.4
	Minimum Impedance	91.3	93.4	96.7	99.3	99.7

Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

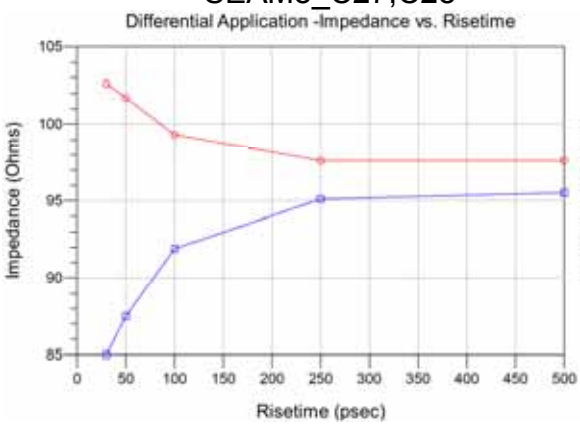
SEAM8_A27,A28



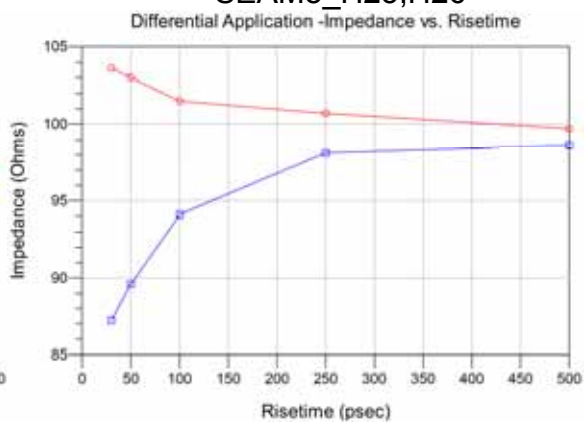
SEAM8_B25,B26



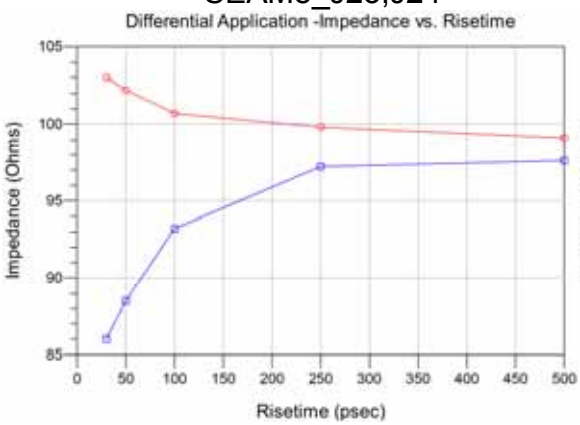
SEAM8_C27,C28



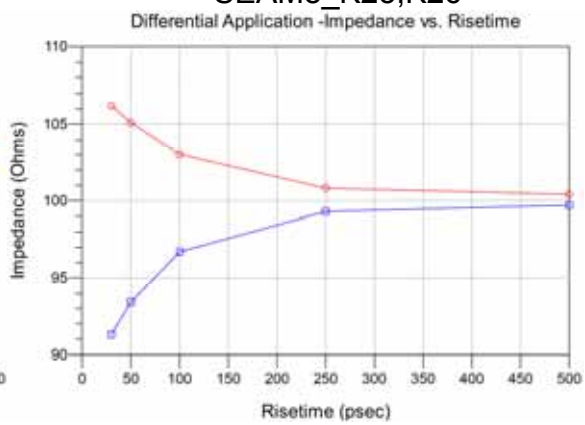
SEAM8_H25,H26



SEAM8_J23,J24



SEAM8_K25,K26

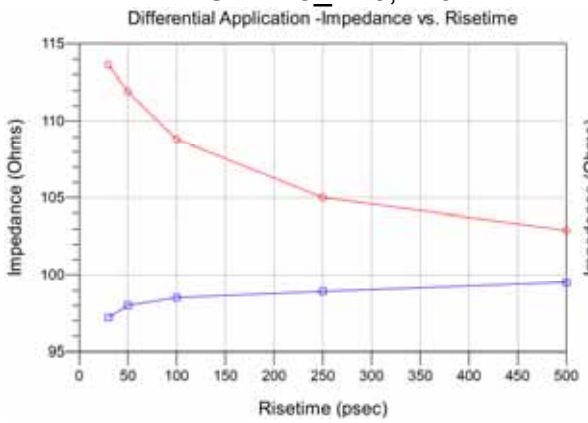


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

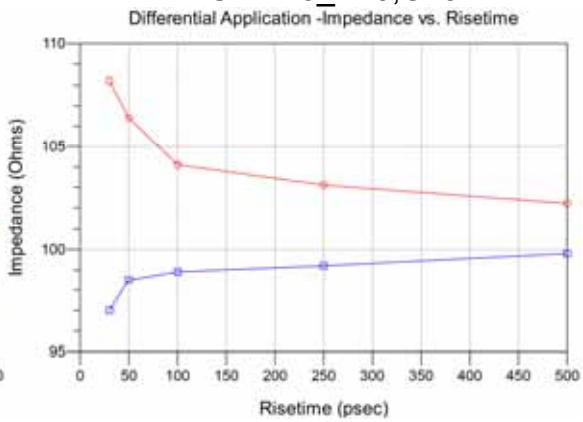
Table 9 – Differential Impedance (Ω) – Optimal Vertical						
Driver	**Signal Risetime**	**30 ps**	**50 ps**	**100 ps**	**250 ps**	**500 ps**
SEAM8_A26,B26	**Maximum Impedance**	113.6	111.9	108.8	105.0	102.9
	Minimum Impedance	97.2	98.0	98.5	98.9	99.5
SEAM8_B25,C25	**Maximum Impedance**	108.2	106.4	104.1	103.1	102.2
	Minimum Impedance	97.0	98.5	98.9	99.2	99.8
SEAM8_D26,E26	**Maximum Impedance**	106.1	105.0	103.3	102.0	101.1
	Minimum Impedance	93.6	95.5	97.1	97.6	97.8
SEAM8_E26,F26	**Maximum Impedance**	110.6	108.8	105.4	101.4	100.7
	Minimum Impedance	94.3	95.5	96.7	97.7	98.8
SEAM8_H26,J26	**Maximum Impedance**	105.9	104.6	102.8	101.6	101.2
	Minimum Impedance	95.8	97.5	97.6	97.9	98.6
SEAM8_J26,K26	**Maximum Impedance**	114.3	112.2	108.5	104.3	102.2
	Minimum Impedance	96.5	96.5	96.5	96.9	97.9

Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

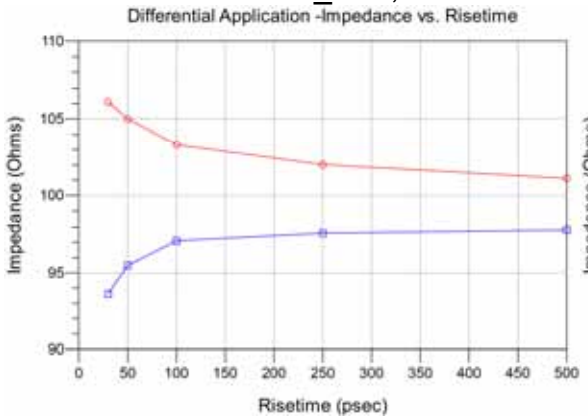
SEAM8_A26,B26



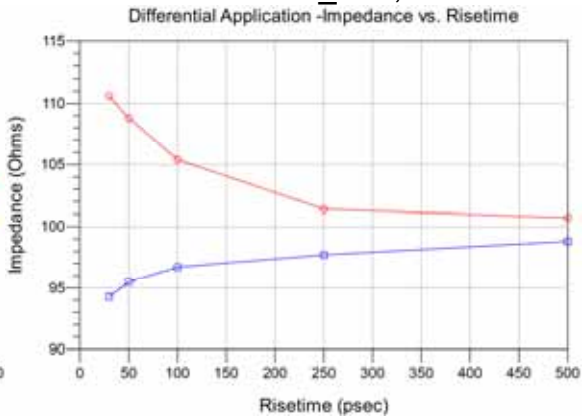
SEAM8_B25,C25



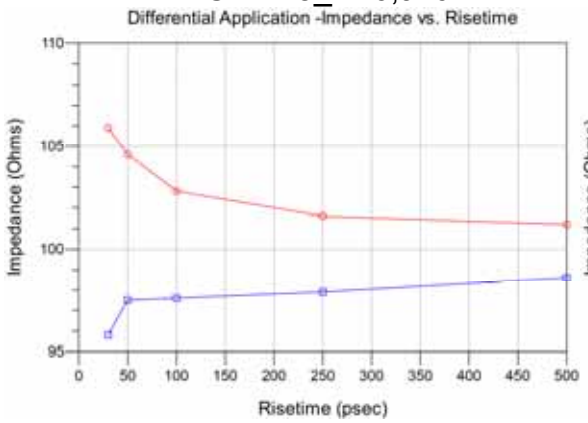
SEAM8_D26,E26



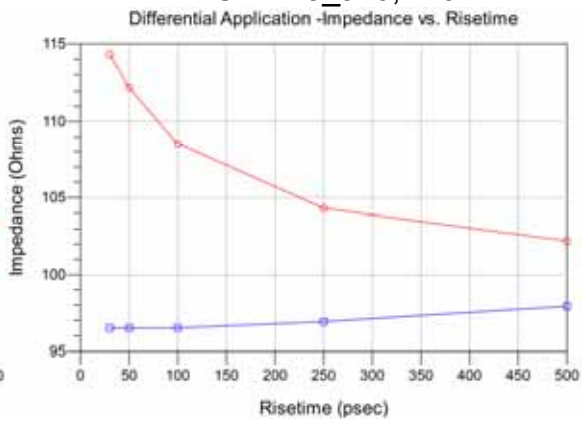
SEAM8_E26,F26



SEAM8_H26,J26



SEAM8_J26,K26

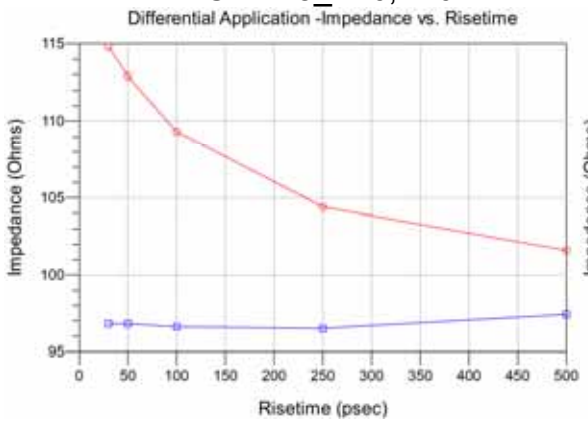


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

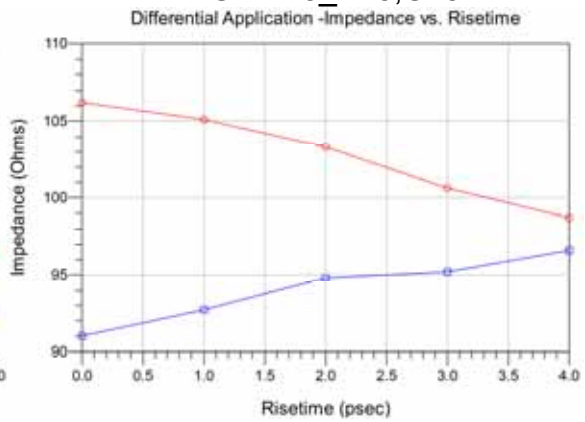
Table 10 – Differential Impedance (Ω) – High Density Vertical						
Driver	**Signal Risetime**	**30 ps**	**50 ps**	**100 ps**	**250 ps**	**500 ps**
SEAM8_A26,B26	**Maximum Impedance**	114.8	112.9	109.3	104.4	101.6
	Minimum Impedance	96.8	96.8	96.6	96.5	97.4
SEAM8_B25,C25	**Maximum Impedance**	106.2	105.1	103.3	100.6	98.7
	Minimum Impedance	91.0	92.7	94.8	95.2	96.6
SEAM8_D26,E26	**Maximum Impedance**	106.1	105.4	103.9	100.3	99.1
	Minimum Impedance	91.8	93.4	95.6	96.7	97.3
SEAM8_F26,G26	**Maximum Impedance**	106.4	105.5	103.9	101.1	99.7
	Minimum Impedance	92.5	94.2	96.3	97.0	97.6
SEAM8_H25,J25	**Maximum Impedance**	106.6	105.5	103.7	101.4	100.2
	Minimum Impedance	95.9	96.8	96.9	97.3	97.7
SEAM8_J26,K26	**Maximum Impedance**	115.2	113.2	109.4	104.9	102.2
	Minimum Impedance	96.4	96.5	96.6	96.7	97.6

Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

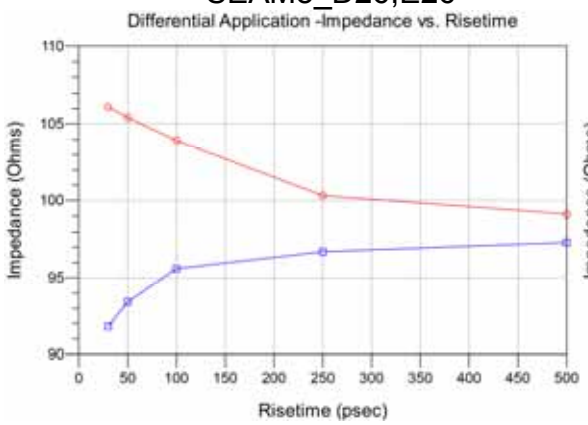
SEAM8_A26,B26



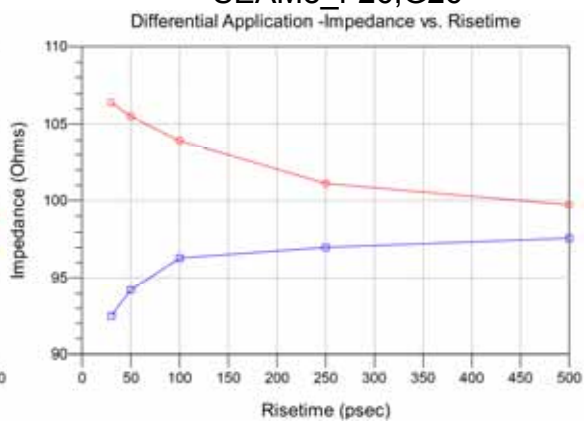
SEAM8_B25,C25



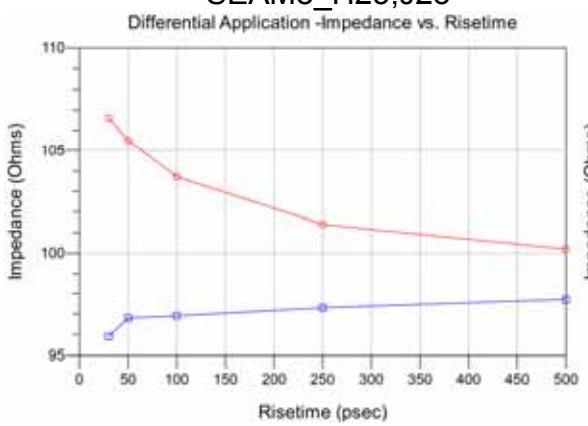
SEAM8_D26,E26



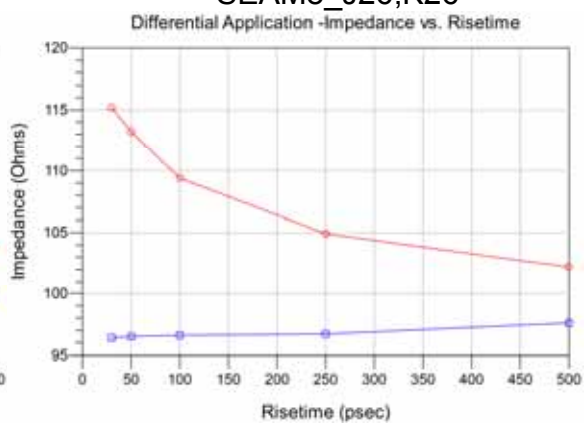
SEAM8_F26,G26



SEAM8_H25,J25



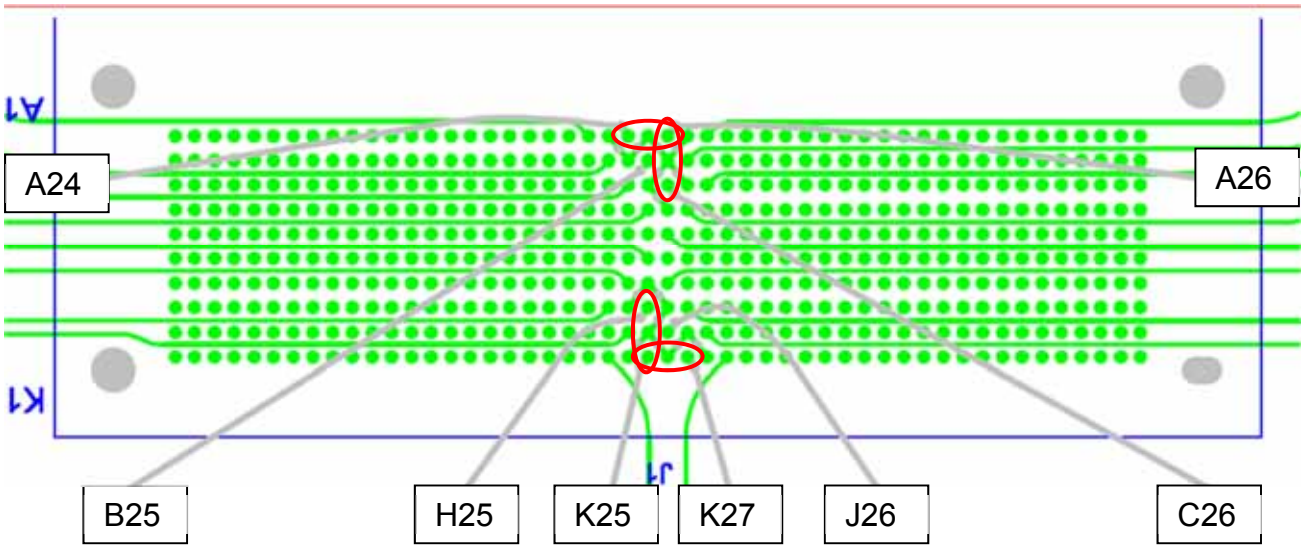
SEAM8_J26,K26



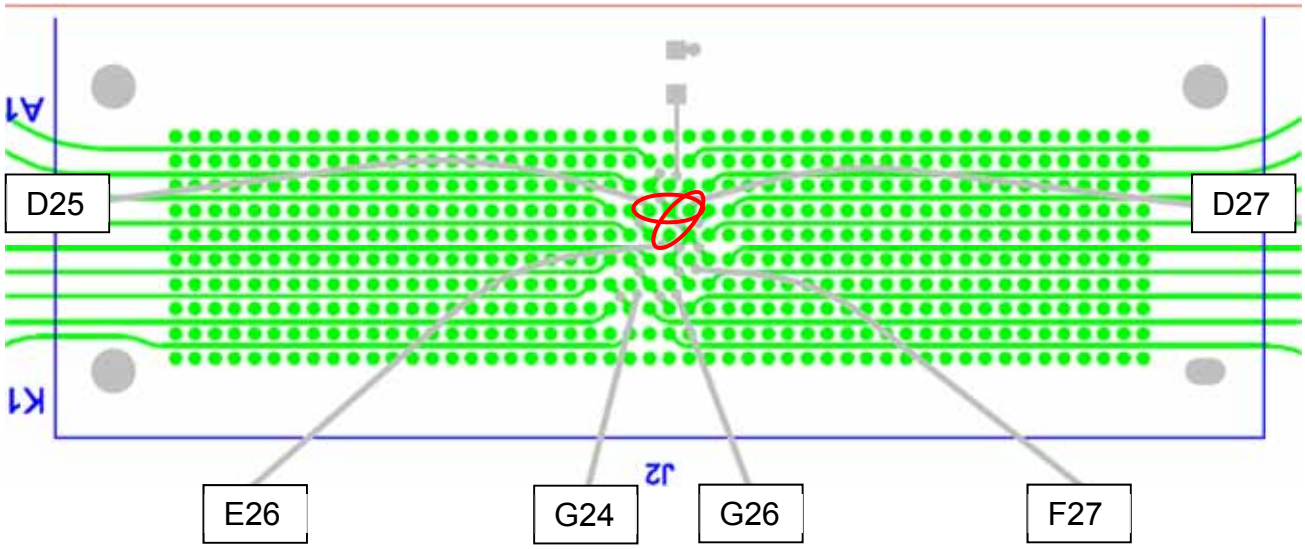
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Table 11 - Single-Ended Crosstalk (%) – 1:1 S/G Pattern							
Input(t_r)	Driver	Receiver	30ps	50 ps	100 ps	250 ps	500 ps
NEXT	SEAM8_A26	SEAM8_A24	1.84	1.74	1.59	1.17	0.71
	SEAM8_A26	SEAM8_C26	1.07	0.67	0.38	0.30	0.23
	SEAM8_D27	SEAM8_D25	0.70	0.64	0.54	0.40	0.25
	SEAM8_D27	SEAM8_F27	0.49	0.44	0.33	0.24	0.16
	SEAM8_K25	SEAM8_K27	2.15	1.91	1.67	1.50	1.07
	SEAM8_K25	SEAM8_H25	1.14	0.82	0.56	0.35	0.26
FEXT	SEAM8_A26	SEAF8-RA_A24	3.60	2.88	1.77	0.87	0.53
	SEAM8_A26	SEAF8-RA_C26	1.48	1.09	0.68	0.35	0.20
	SEAM8_D27	SEAF8-RA_D25	0.96	0.74	0.46	0.26	0.16
	SEAM8_D27	SEAF8-RA_F27	0.60	0.52	0.35	0.21	0.13
	SEAM8_K25	SEAF8-RA_K27	4.10	2.95	1.73	0.91	0.62
	SEAM8_K25	SEAF8-RA_H25	1.36	1.03	0.64	0.37	0.26

Single-Ended 1:1 S/G Pattern Crosstalk Pin Map



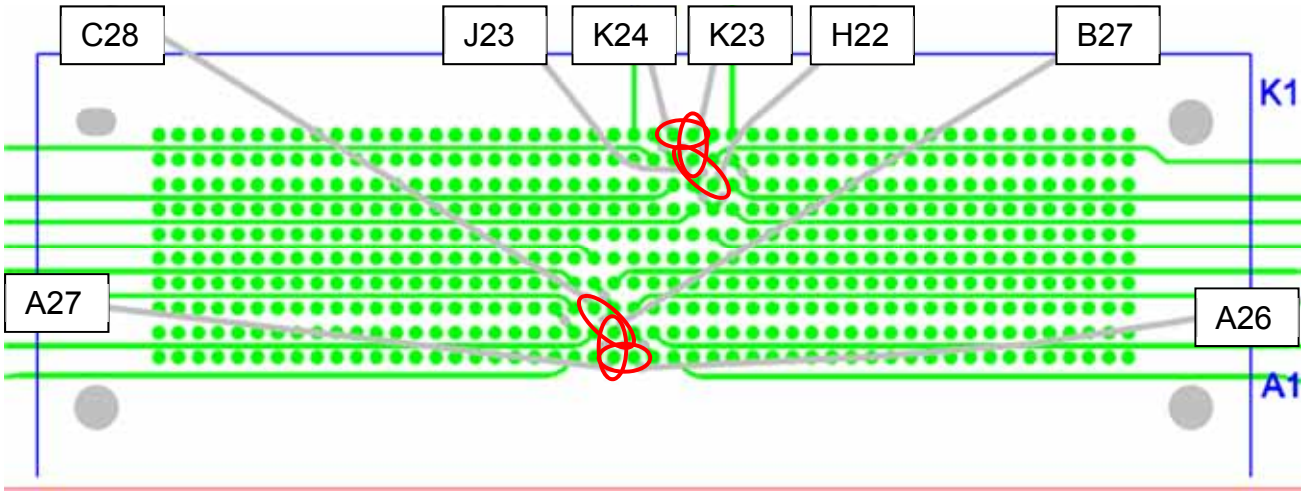
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female



Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Table 12 - Single-Ended Crosstalk (%) – 2:1 S/G Pattern							
Input(t_r)	Driver	Receiver	30ps	50 ps	100 ps	250 ps	500 ps
NEXT	SEAM8_A27	SEAM8_A26	15.20	14.68	13.64	8.70	5.01
	SEAM8_A27	SEAM8_B27	8.40	7.99	6.82	4.19	2.47
	SEAM8_B27	SEAM8_C28	4.23	3.96	3.56	2.37	1.44
	SEAM8_K23	SEAM8_K24	15.65	14.89	14.51	12.85	8.86
	SEAM8_K23	SEAM8_J23	10.36	10.15	9.83	7.96	5.20
	SEAM8_H22	SEAM8_J23	4.15	3.98	3.76	3.15	2.12
FEXT	SEAM8_A27	SEAF8-RA_A26	8.65	7.11	5.67	3.69	2.27
	SEAM8_A27	SEAF8-RA_B27	3.99	3.43	3.10	1.96	1.16
	SEAM8_B27	SEAF8-RA_C28	3.24	2.70	2.33	1.54	0.91
	SEAM8_K23	SEAF8-RA_K24	11.92	8.72	5.86	4.79	3.45
	SEAM8_K23	SEAF8-RA_J23	3.77	3.73	3.68	2.88	1.83
	SEAM8_H22	SEAF8-RA_J23	2.50	2.43	2.31	1.90	1.25

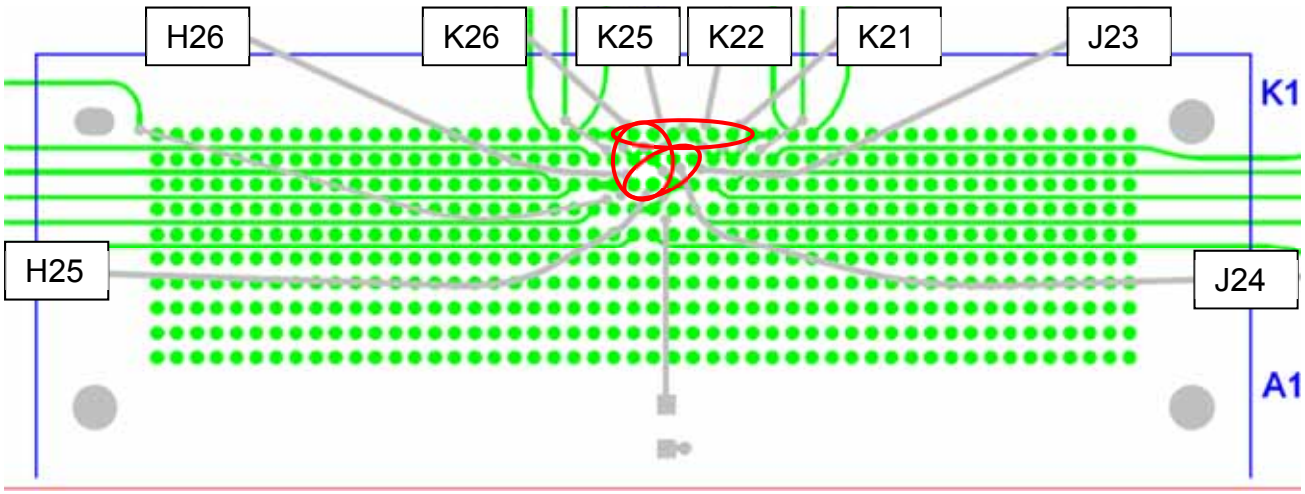
Single-Ended 2:1 S/G Pattern Crosstalk Pin Map



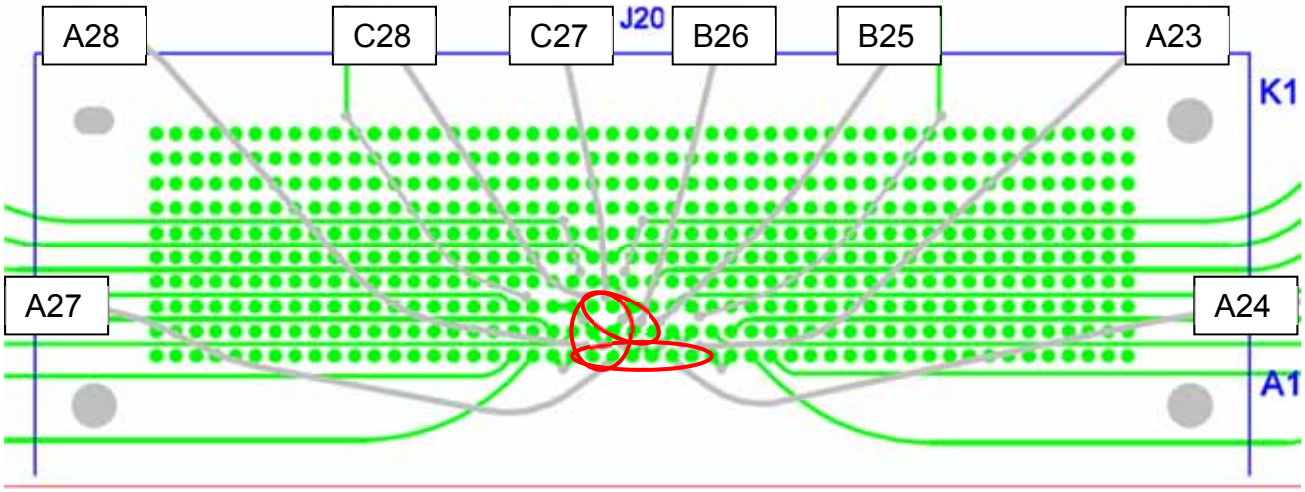
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Table 13 - Differential Crosstalk (%) – Optimal Horizontal							
Input(t_r)	Driver	Receiver	30ps	50 ps	100 ps	250 ps	500 ps
NEXT	SEAM8_A27,A28	SEAM8_A23,A24	0.42	0.21	0.13	<0.1	<0.1
	SEAM8_A27,A28	SEAM8_C27,C28	0.16	0.13	0.10	<0.1	<0.1
	SEAM8_B25,B26	SEAM8_C27,C28	1.05	1.00	0.86	0.51	0.30
	SEAM8_K25,K26	SEAM8_K21,K22	0.39	0.20	<0.1	<0.1	<0.1
	SEAM8_K25,K26	SEAM8_H25,H26	0.46	0.38	0.21	<0.1	<0.1
	SEAM8_H25,H26	SEAM8_J23,J24	1.08	1.05	1.00	0.80	0.51
FEXT	SEAM8_A27,A28	SEAF8-RA_A23,A24	0.62	0.46	0.23	<0.1	<0.1
	SEAM8_A27,A28	SEAF8-RA_C27,C28	0.20	0.17	0.12	<0.1	<0.1
	SEAM8_B25,B26	SEAF8-RA_C27,C28	0.31	0.22	0.14	<0.1	<0.1
	SEAM8_K25,K26	SEAF8-RA_K21,K22	0.60	0.42	0.20	<0.1	<0.1
	SEAM8_K25,K26	SEAF8-RA_H25,H26	0.59	0.36	0.20	<0.1	<0.1
	SEAM8_H25,H26	SEAF8-RA_J23,J24	0.16	0.11	<0.1	<0.1	<0.1

Differential Optimal Horizontal Crosstalk Pin Map



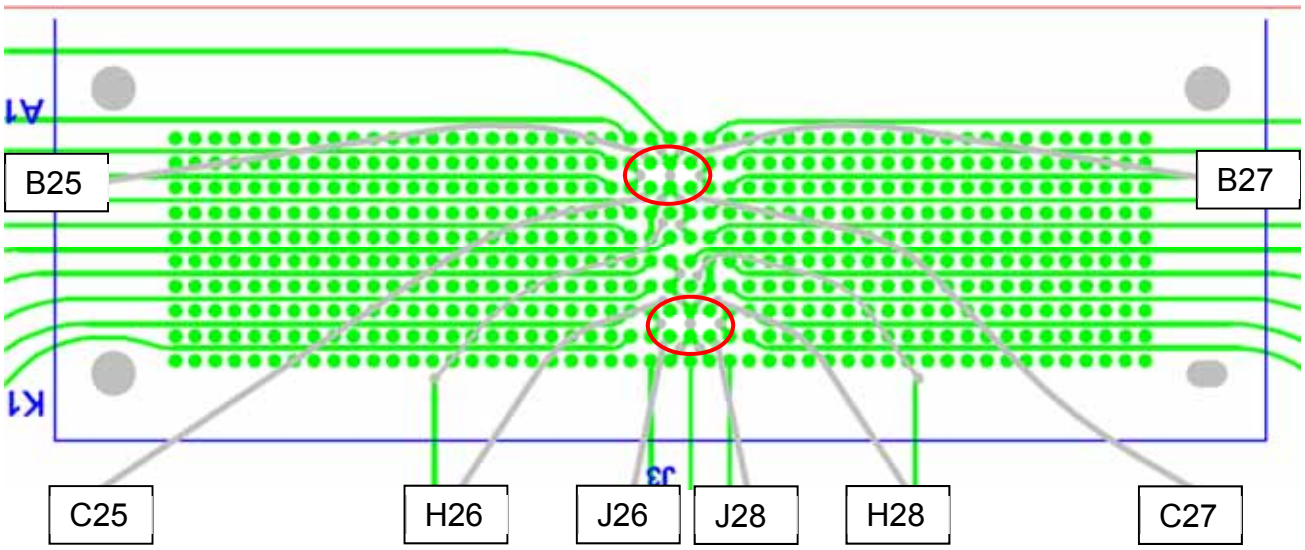
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female



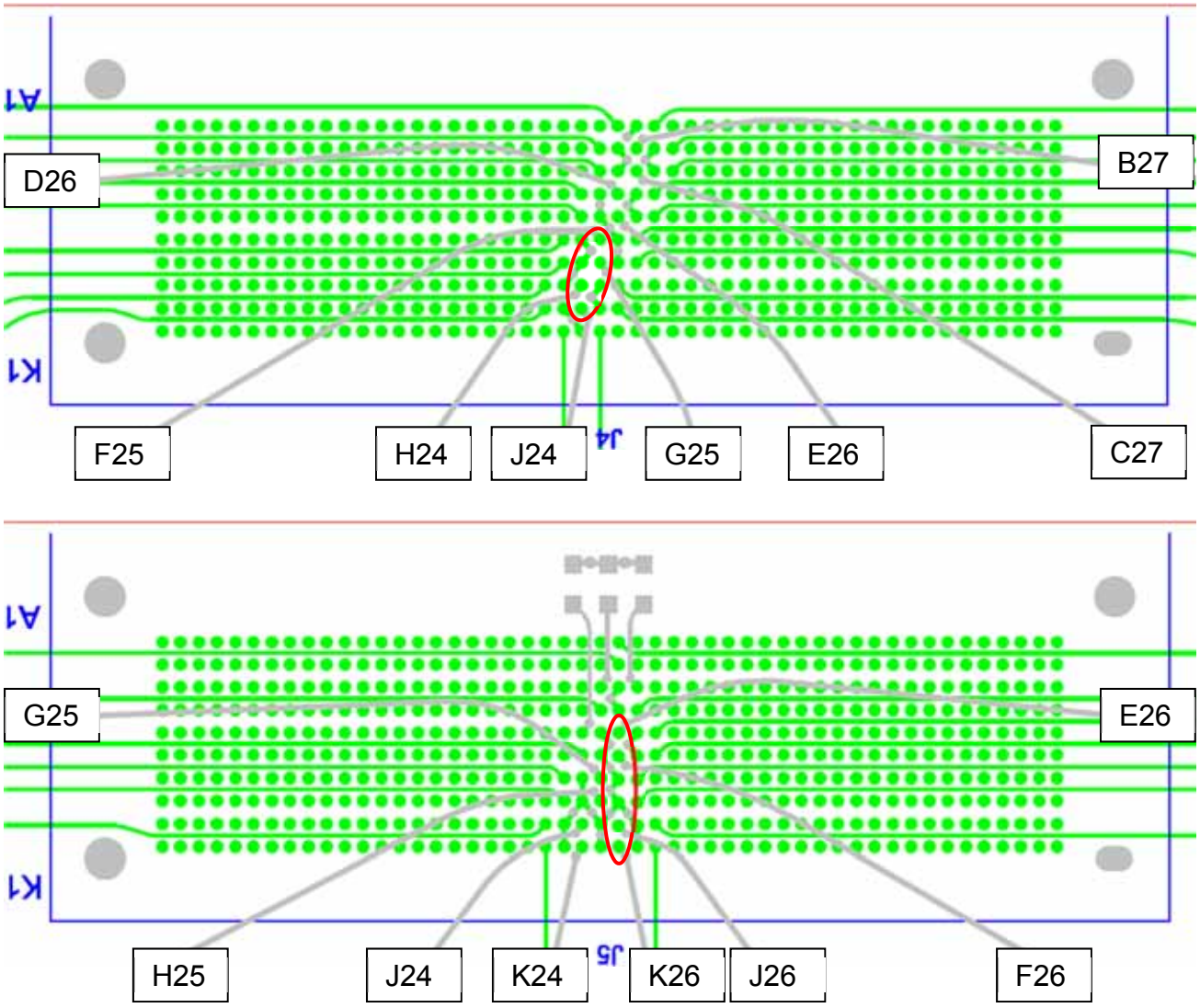
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Table 14 - Differential Crosstalk (%) – Optimal Vertical							
Input(t_r)	**Driver**	**Receiver**	**30ps**	**50 ps**	**100 ps**	**250 ps**	**500 ps**
NEXT	SEAM8_B25,C25	SEAM8_B27,C27	1.10	0.74	0.44	0.26	0.17
	SEAM8_H26,J26	SEAM8_H28,J28	1.18	0.75	0.43	0.27	0.19
	SEAM8_F25,G25	SEAM8_H24,J24	1.14	1.12	1.05	0.80	0.49
	SEAM8_J26,K26	SEAM8_E26,F26	0.12	<0.1	<0.1	<0.1	<0.1
	SEAM8_A26,B26	SEAM8_E26,F26	0.14	<0.1	<0.1	<0.1	<0.1
	SEAM8_A26,B26	SEAM8_C25,D25	1.17	1.13	1.03	0.63	0.35
FEXT	SEAM8_B25,C25	SEAF8-RA_B27,C27	1.20	0.83	0.47	0.20	0.11
	SEAM8_H26,J26	SEAF8-RA_H28,J28	1.42	1.05	0.55	0.23	0.13
	SEAM8_F25,G25	SEAF8-RA_H24,J24	0.38	0.24	0.11	<0.1	<0.1
	SEAM8_J26,K26	SEAF8-RA_E26,F26	0.21	0.15	<0.1	<0.1	<0.1
	SEAM8_A26,B26	SEAF8-RA_E26,F26	0.17	0.12	<0.1	<0.1	<0.1
	SEAM8_A26,B26	SEAF8-RA_C25,D25	0.41	0.24	0.13	<0.1	<0.1

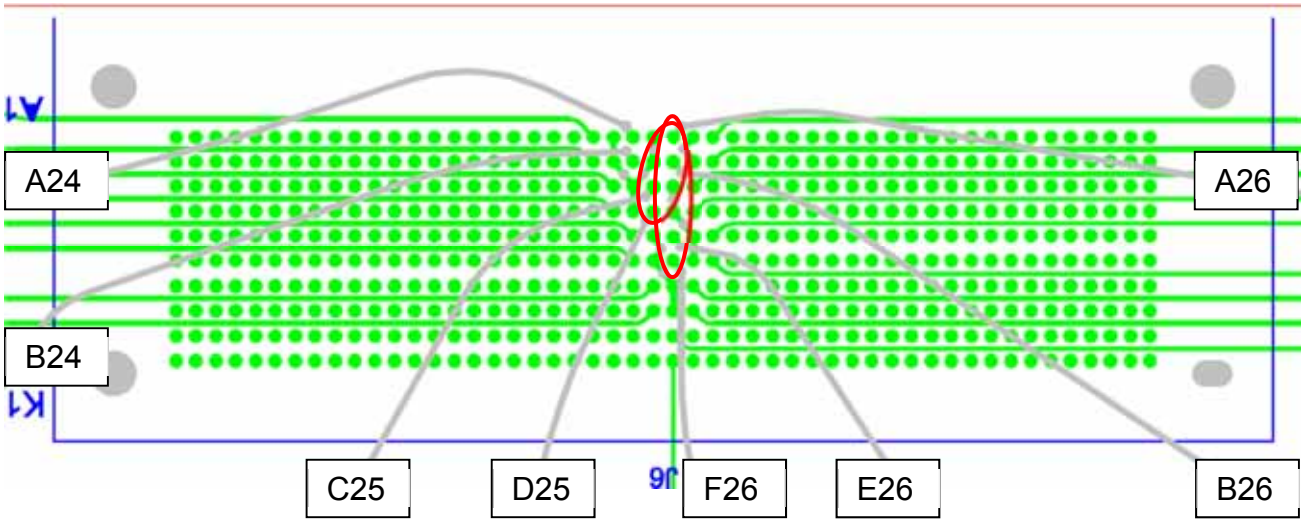
Differential Optimal Vertical Crosstalk Pin Map



Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female



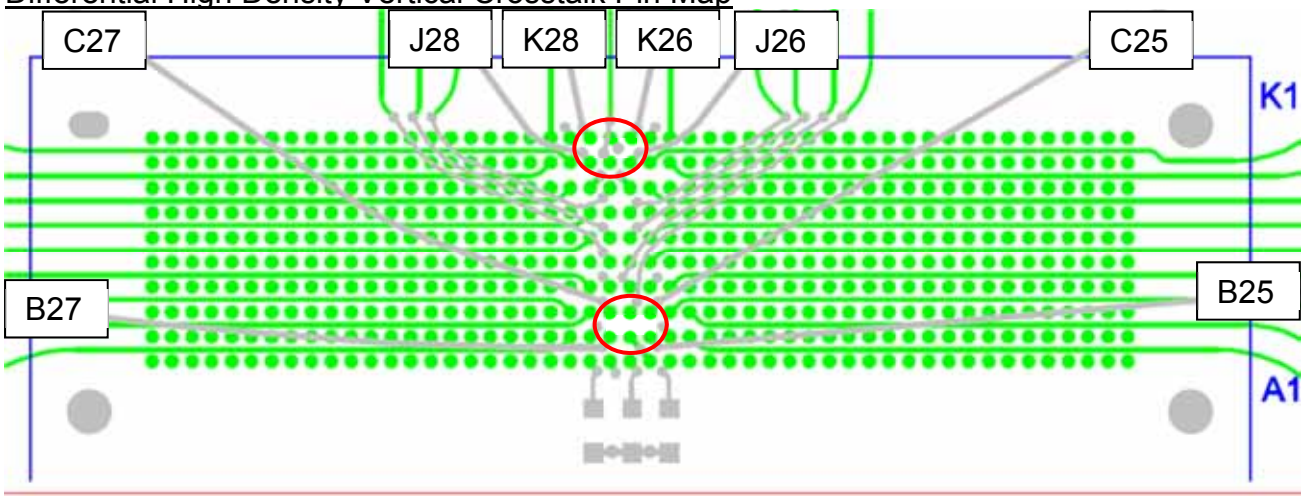
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female



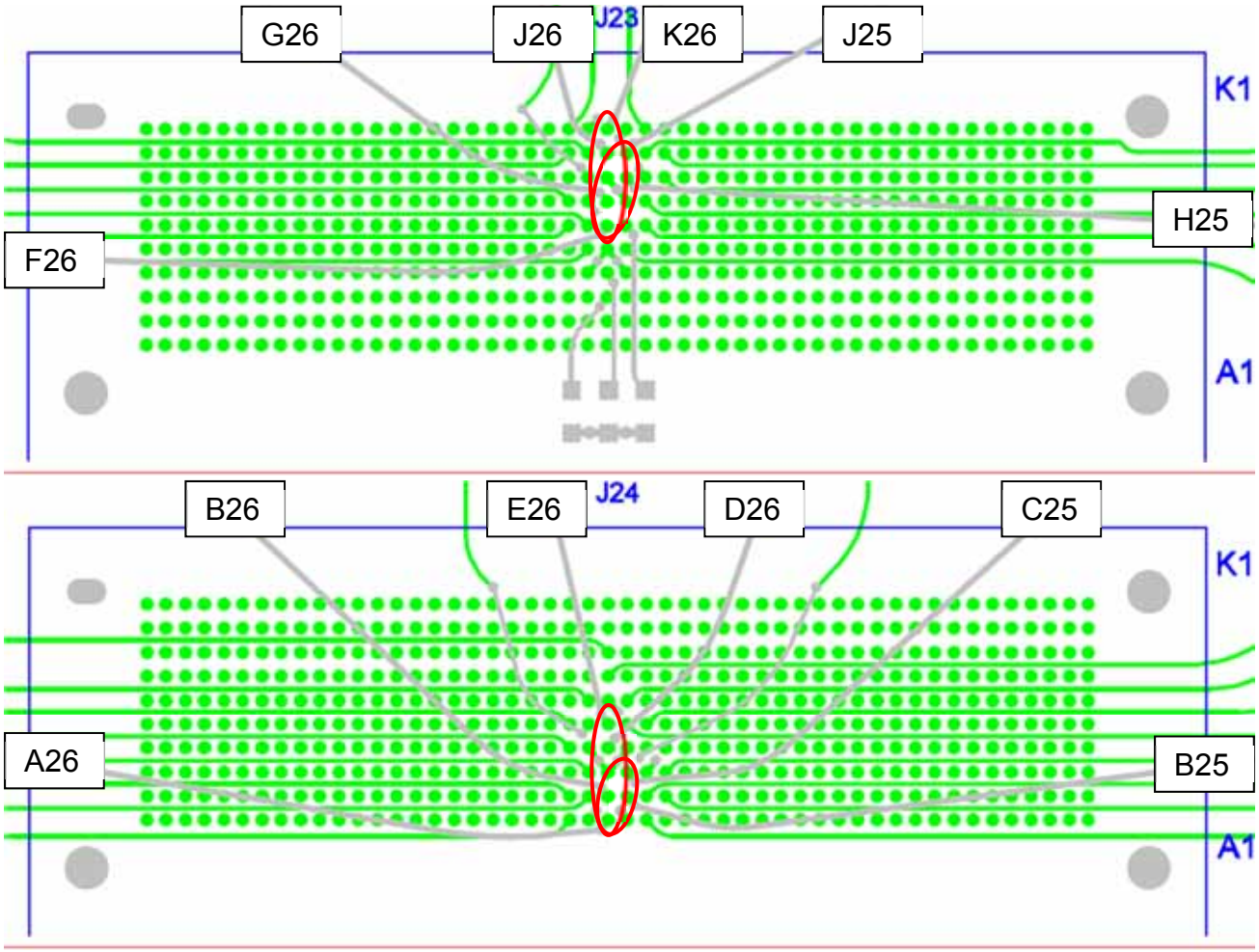
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Table 15 - Differential Crosstalk (%) – High Density Vertical							
Input(t_r)	**Driver**	**Receiver**	**30ps**	**50 ps**	**100 ps**	**250 ps**	**500 ps**
NEXT	SEAM8_B25,C25	SEAM8_B27,C27	0.85	0.68	0.56	0.44	0.28
	SEAM8_J26,K26	SEAM8_J28,K28	1.19	1.09	1.02	0.87	0.61
	SEAM8_F26,G26	SEAM8_H25,J25	1.17	1.00	0.91	0.69	0.39
	SEAM8_F26,G26	SEAM8_J26,K26	0.58	0.49	0.32	0.18	0.12
	SEAM8_A26,B26	SEAM8_D26,E26	0.22	0.16	0.12	0.10	<0.1
	SEAM8_A26,B26	SEAM8_B25,C25	3.80	3.03	2.44	1.50	0.82
FEXT	SEAM8_B25,C25	SEAF8-RA_B27,C27	0.98	0.77	0.52	0.39	0.25
	SEAM8_J26,K26	SEAF8-RA_J28,K28	2.10	1.50	0.92	0.56	0.38
	SEAM8_F26,G26	SEAF8-RA_H25,J25	0.32	0.22	0.13	<0.1	<0.1
	SEAM8_F26,G26	SEAF8-RA_J26,K26	0.62	0.47	0.27	0.14	0.10
	SEAM8_A26,B26	SEAF8-RA_D26,E26	0.24	0.20	0.14	<0.1	<0.1
	SEAM8_A26,B26	SEAF8-RA_B25,C25	0.78	0.52	0.38	0.25	0.16

Differential High Density Vertical Crosstalk Pin Map



Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female



Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Table 16 - Propagation Delay (Mated Connector)	
Single-Ended: 1:1 S/G, row A	96 ps
Single-Ended: 1:1 S/G, row C	115 ps
Single-Ended: 1:1 S/G, row D	125 ps
Single-Ended: 1:1 S/G, row F	144 ps
Single-Ended: 1:1 S/G, row H	162 ps
Single-Ended: 1:1 S/G, row K	182 ps
Single-Ended: 2:1 S/G, row A	103 ps
Single-Ended: 2:1 S/G, row B	111 ps
Single-Ended: 2:1 S/G, row C	118 ps
Single-Ended: 2:1 S/G, row H	166 ps
Single-Ended: 2:1 S/G, row J	176 ps
Single-Ended: 2:1 S/G, row K	186 ps
Differential: Optimal Horizontal, row A	94 ps
Differential: Optimal Horizontal, row B	103 ps
Differential: Optimal Horizontal, row C	112 ps
Differential: Optimal Horizontal, row H	154 ps
Differential: Optimal Horizontal, row J	165 ps
Differential: Optimal Horizontal, row K	174 ps
Differential: Optimal Vertical, row A,B	101 ps
Differential: Optimal Vertical, row B,C	109 ps
Differential: Optimal Vertical, row D,E	130 ps

Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Differential: Optimal Vertical, row E,F	139 ps
Differential: Optimal Vertical, row H,J	168 ps
Differential: Optimal Vertical, row J,K	178 ps
Differential: High Density Vertical, row A,B	105 ps
Differential: High Density Vertical, row B,C	110 ps
Differential: High Density Vertical, row D,E	133 ps
Differential: High Density Vertical, row F,G	151 ps
Differential: High Density Vertical, row H,J	172 ps
Differential: High Density Vertical, row J,K	180 ps

Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Characterization Details

This report presents data that characterizes the signal integrity response of a connector pair in a controlled printed circuit board (PCB) environment. All efforts are made to reveal typical best-case responses inherent to the system under test (SUT).

In this report, the SUT includes the connector pair and footprint effects on a typical multi-layer PCB. PCB effects (trace loss) are de-embedded from test data. Board related effects, such as pad-to-ground capacitance, are included in the data presented in this report.

Additionally, intermediate test signal connections can mask the connector's true performance. Such connection effects are minimized by using high performance test cables and adapters. Where appropriate, calibration and de-embedding routines are also used to reduce residual effects.

Differential and Single-Ended Data

Most Samtec connectors can be used successfully in both differential and single-ended applications. However, electrical performance will differ depending on the signal drive type. In this report, data is presented for both differential and single-ended drive scenarios.

Connector Signal to Ground Ratio

Samtec connectors are most often designed for generic applications and can be implemented using various signal and ground pin assignments. In high speed systems, provisions must be made in the interconnect for signal return currents. Such paths are often referred to as "ground". In some connectors, a ground plane or blade, or an outer shield, is used as the signal return, while in others, connector pins are used as signal returns. Various combinations of signal pins, ground blades, and shields can also be utilized. Electrical performance can vary significantly depending upon the number and location of ground pins.

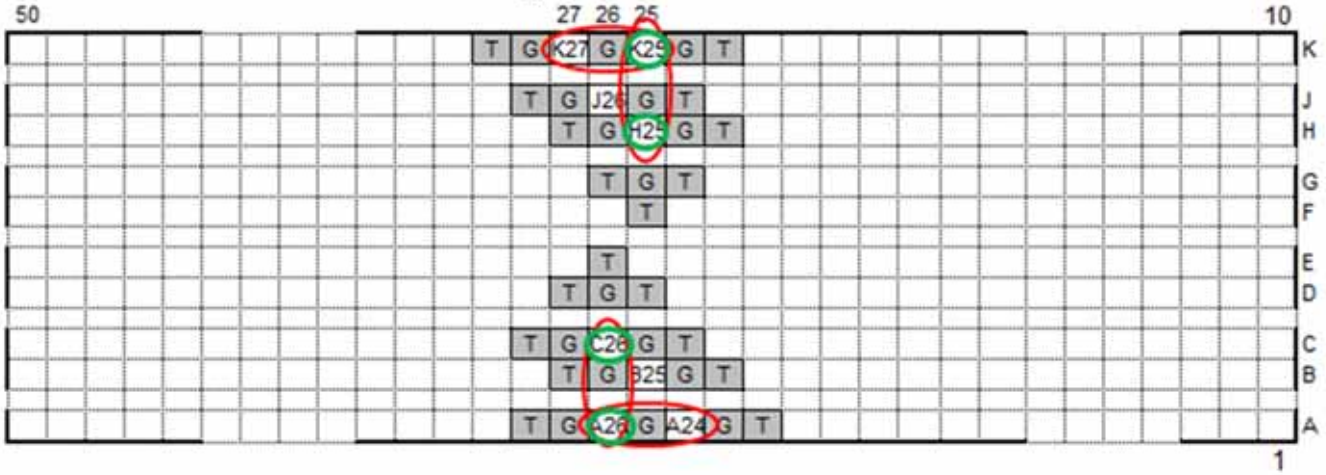
In general, the more pins dedicated to ground, the better electrical performance will be. But dedicating pins to ground reduces signal density of a connector. Therefore, care must be taken when choosing signal/ground ratios in cost or density-sensitive applications.

Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

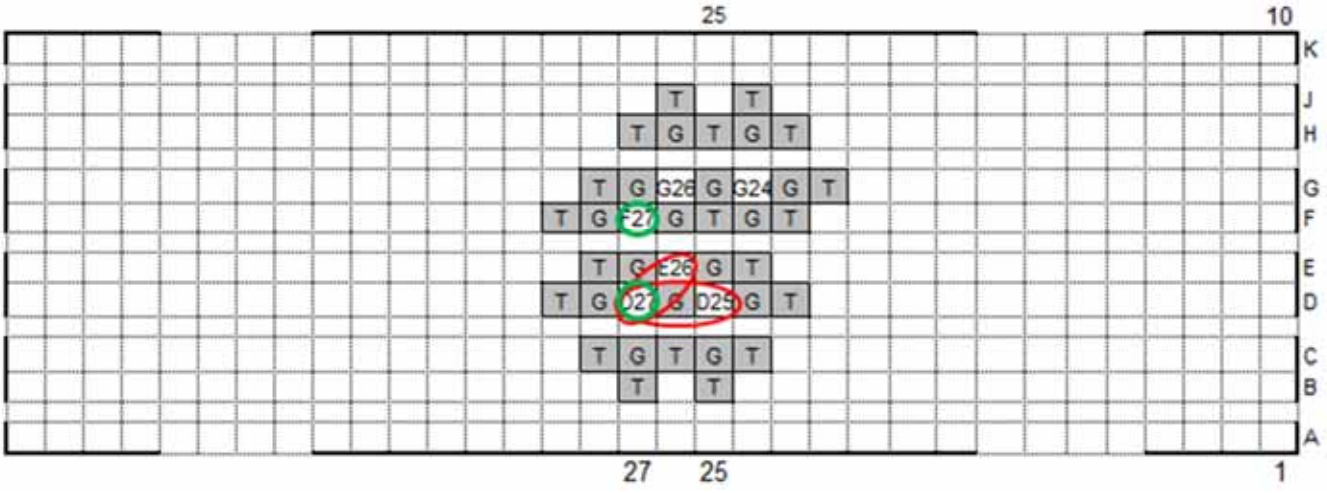
For this connector, the following array configurations are evaluated:

	Open pin field	G	Grounded pin field
	Signal pin field	T	50 ohm termination field

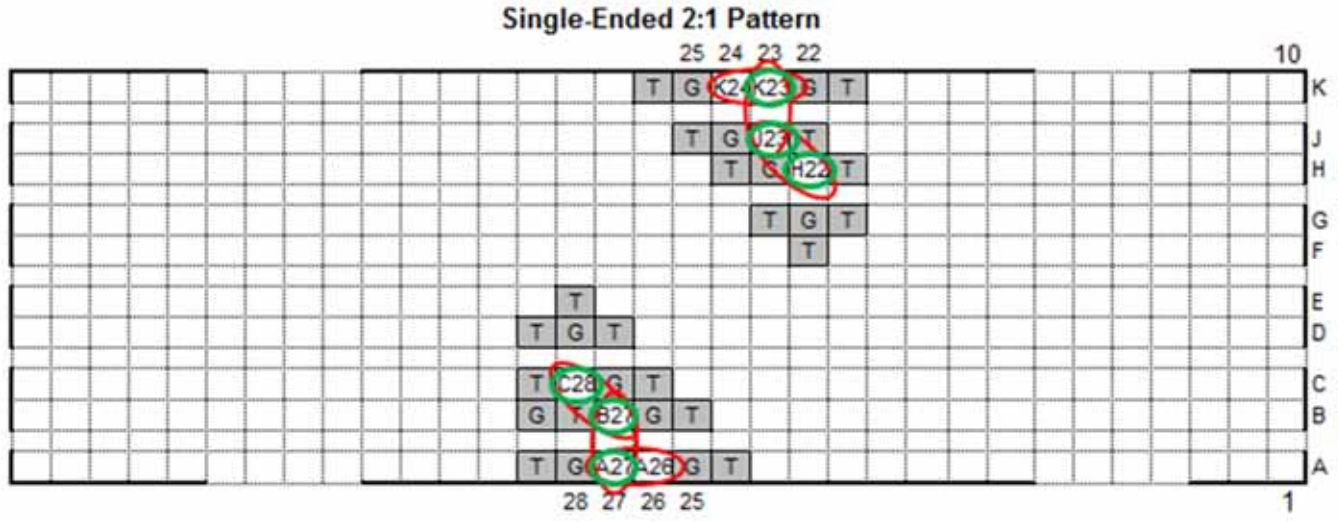
Single-Ended 1:1 Pattern 1



Single-Ended 1:1 Pattern 2



Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

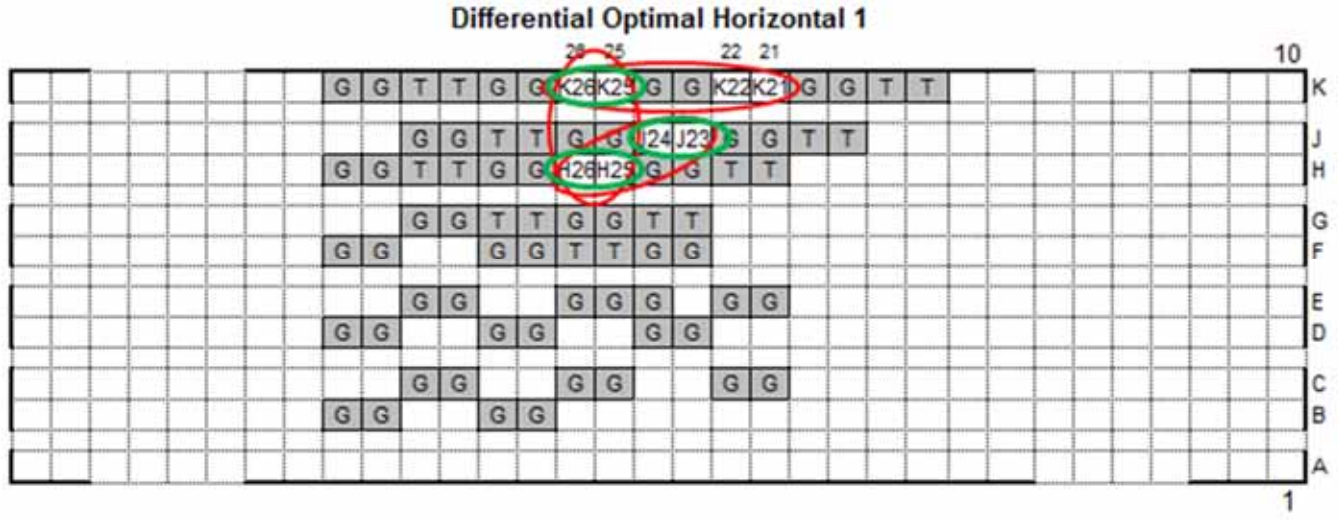


Single-Ended Impedance (denoted by green circles)**:**

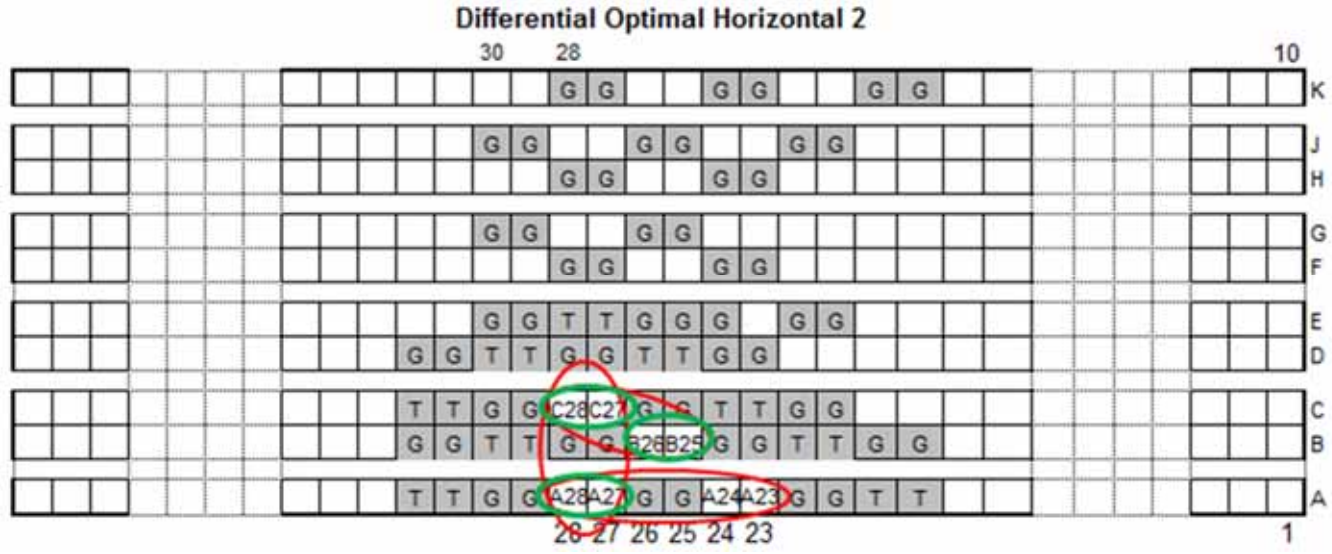
- 1:1 S/G ratio
- 2:1 S/G ratio

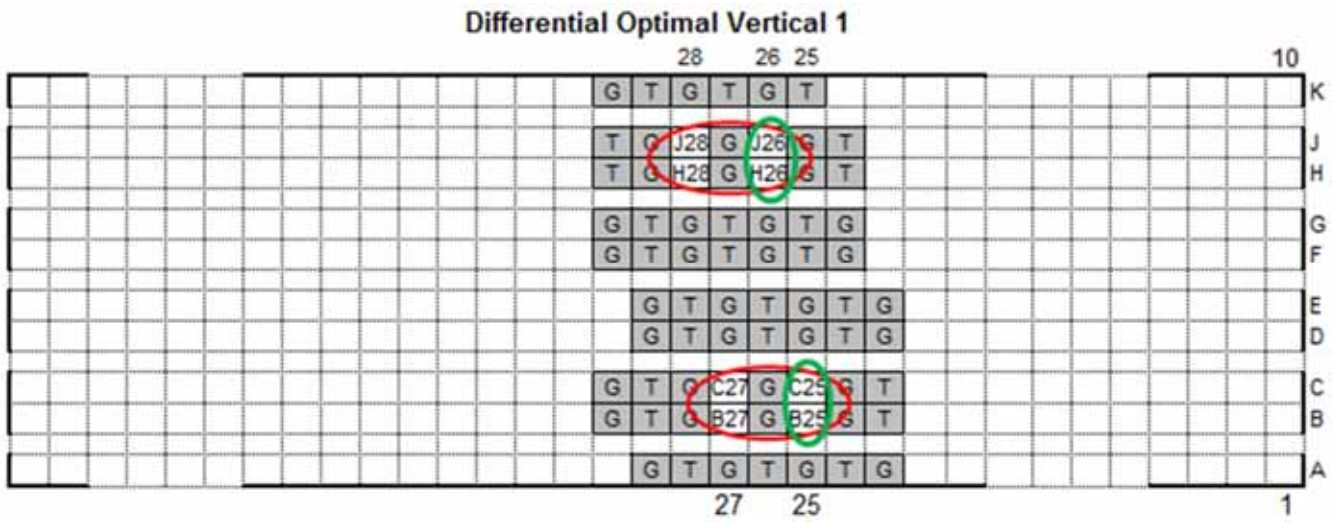
Single-Ended Crosstalk (denoted by red circles)**:**

- 1:1 S/G ratio
- 2:1 S/G ratio



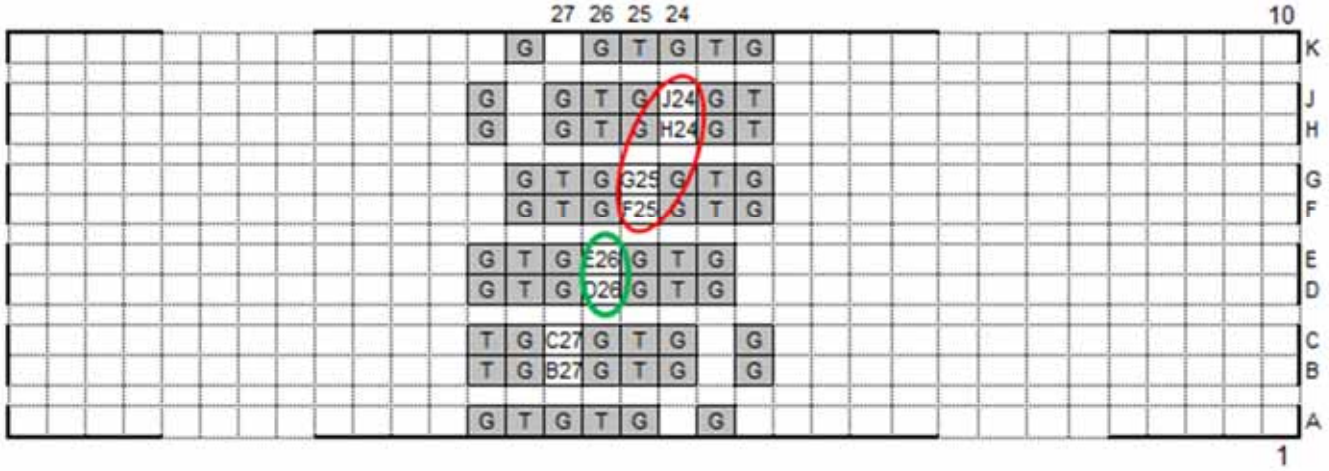
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female



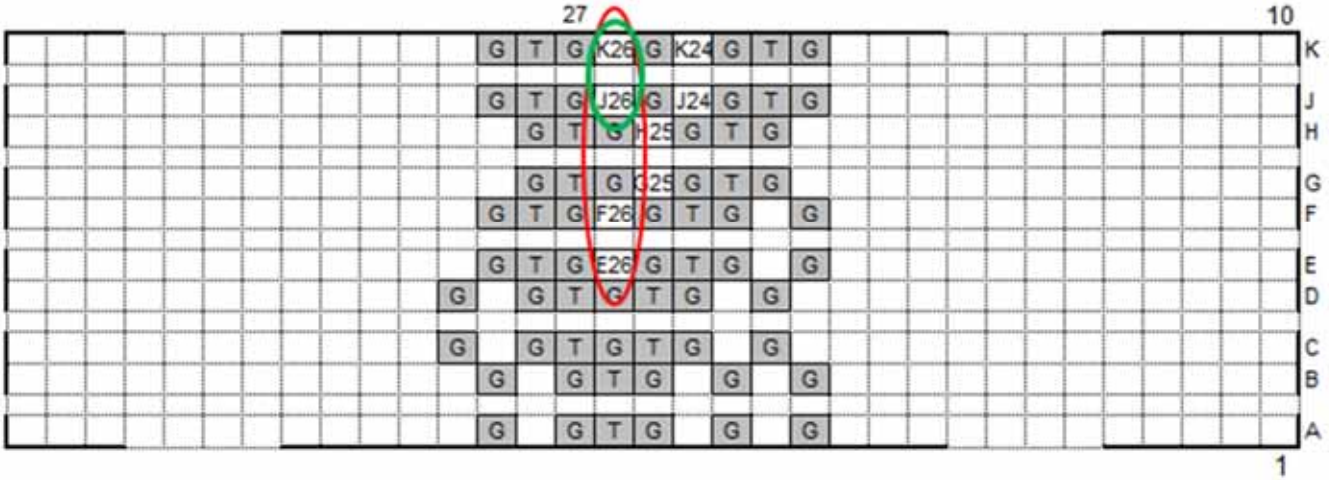


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Differential Optimal Vertical 2

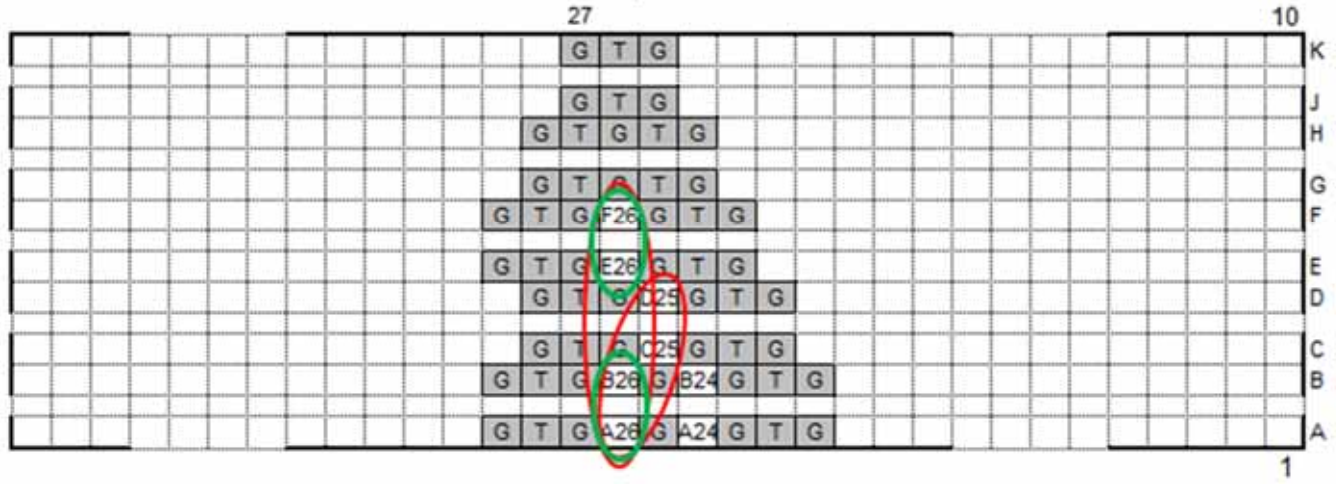


Differential Optimal Vertical 3

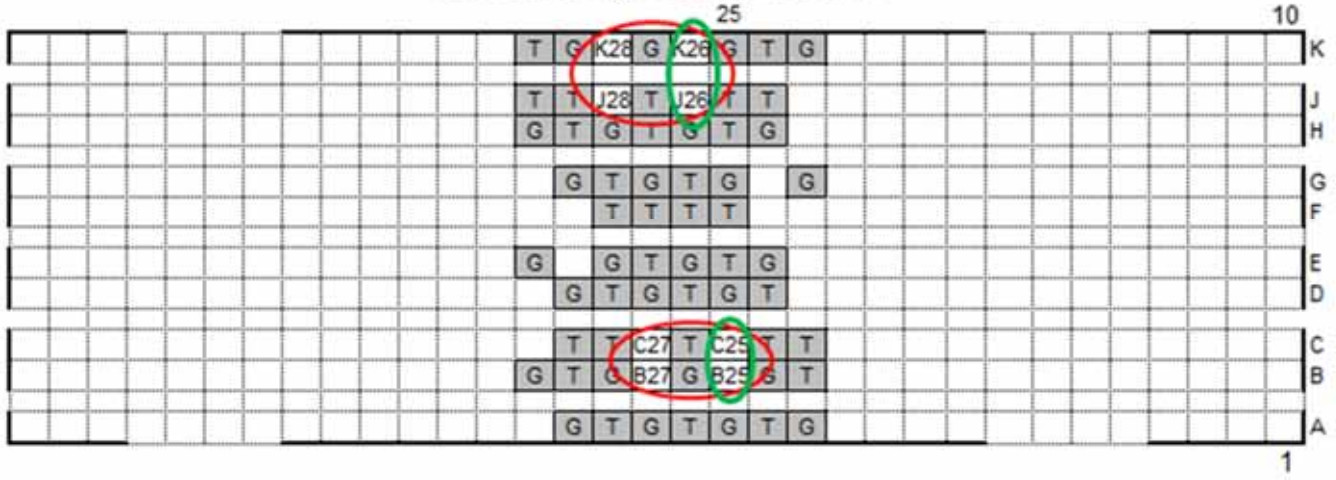


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

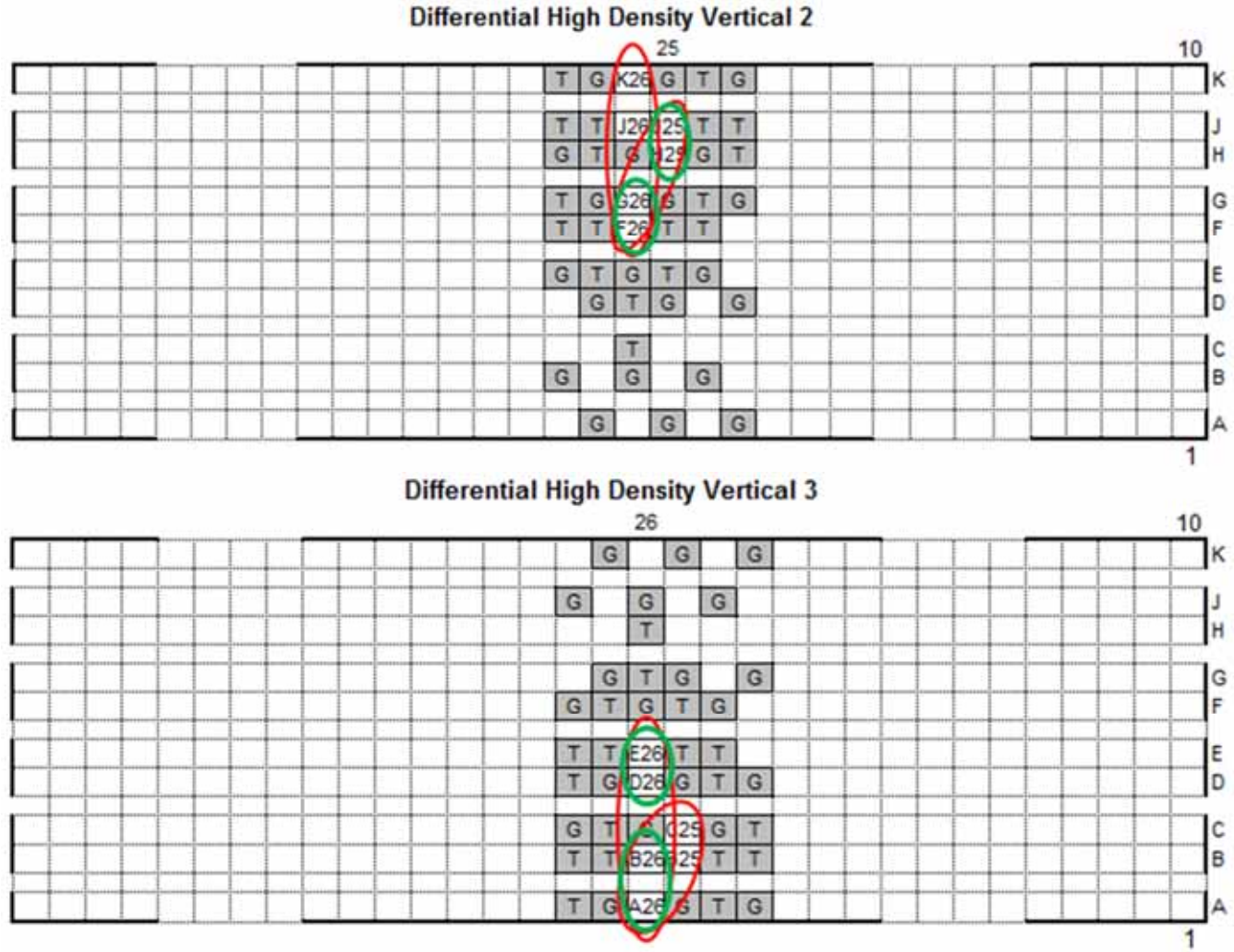
Differential Optimal Vertical 4



Differential High Density Vertical 1



Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female



Differential Impedance (denoted by green circles):

- Optimal Horizontal
- Optimal Vertical
- High Density Vertical

Differential Crosstalk (denoted by red circles):

- Optimal Horizontal
- Optimal Vertical
- High Density Vertical

Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Only one single-ended signal or differential pair was driven for crosstalk measurements.

Other configurations can be evaluated upon request. Please contact sig@samtec.com for more information.

In a real system environment, active signals might be located at the outer edges of the signal contacts of concern, as opposed to the ground signals utilized in laboratory testing. For example, in a single-ended system, a pin-out of "SSSS", or four adjacent single ended signals might be encountered as opposed to the "GSG" and "GSSG" configurations tested in the laboratory. Electrical characteristics in such applications could vary slightly from laboratory results. But in most applications, performance can safely be considered equivalent.

Signal Edge Speed (Rise Time):
In pulse signaling applications, the perceived performance of the interconnect can vary significantly depending on the edge rate or rise time of the exciting signal. For this report, the fastest rise time used was 30 ps. Generally, this should demonstrate worst-case performance.

In many systems, the signal edge rate will be significantly slower at the connector than at the driver launch point. To estimate interconnect performance at other edge rates, data is provided for several rise times between 30ps and 500ps.

For this report, measured rise times were at 10%-90% signal levels.

Frequency Domain Data
Frequency Domain parameters are helpful in evaluating the connector system's signal loss and crosstalk characteristics across a range of sinusoidal frequencies. In this report, parameters presented in the Frequency Domain are Insertion Loss, Return Loss, and Near-End and Far-End Crosstalk. Other parameters or formats, such as VSWR or S-Parameters, may be available upon request. Please contact our Signal Integrity Group at sig@samtec.com for more information.

Frequency performance characteristics for the SUT are generated directly from network analyzer measurements.

Time Domain Data
Time Domain parameters indicate impedance mismatch versus length, signal propagation time and crosstalk in a pulsed signal environment.

Impedance mismatch versus length is measured by DSA8200 Digital Serial Analyzer. Board related effects, such as pad-to-ground capacitance and trace loss, are included in the data presented in this report. The impedance data is provided in Appendix B of this report.

Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

The measured S-Parameters from the network analyzer are post-processed using Agilent Advanced Design System to obtain the time domain response for signal propagation time and crosstalk. The Time Domain procedure is provided in Appendix E of this report. Parameters or formats not included in this report may be available upon request. Please contact our Signal Integrity Group at sig@samtec.com for more information.

In this report, propagation delay is defined as the signal propagation time through the connector and connector footprint. It includes 27.78 mils of PCB trace on each end of the connector. Delay is measured at 100 picoseconds signal rise-time. Delay is calculated as the difference in time measured between the 50% amplitude levels of the input and output pulses.

Crosstalk or coupled noise data is provided for various signal configurations. All measurements are single disturber. Crosstalk is calculated as a ratio of the input line voltage to the coupled line voltage. The input line is sometimes described as the active or drive line. The coupled line is sometimes described as the quiet or victim line. Crosstalk ratio is tabulated in this report as a percentage. Measurements are made at both the near-end and far-end of the SUT.

Data for other configurations may be available. Please contact our Signal Integrity Group at sig@samtec.com for further information.

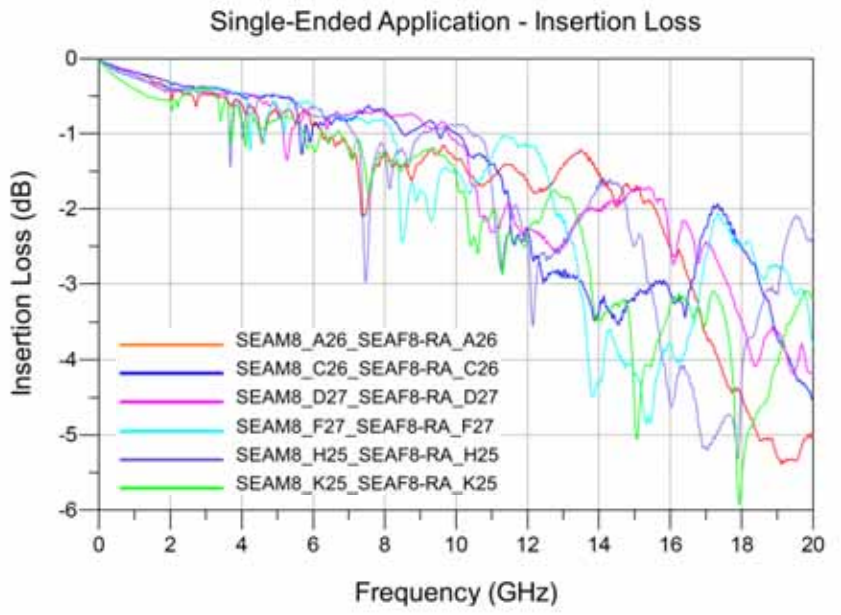
As a rule of thumb, 10% crosstalk levels are often used as a general first pass limit for determining acceptable interconnect performance. But modern system crosstalk tolerance can vary greatly. For advice on connector suitability for specific applications, please contact our Signal Integrity Group at sig@samtec.com.

Additional information concerning test conditions and procedures is located in the appendices of this report. Further information may be obtained by contacting our Signal Integrity Group at sig@samtec.com.

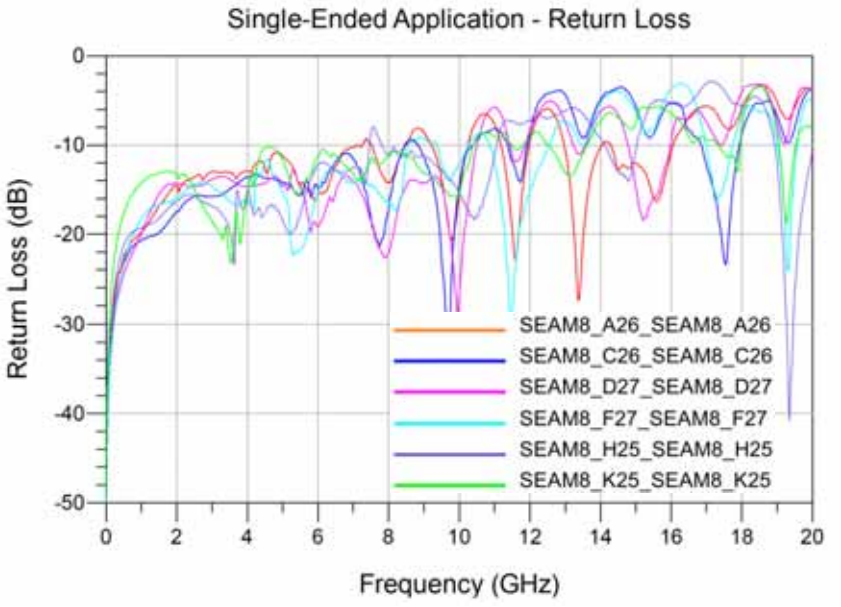
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Appendix A – Frequency Domain Response Graphs

Single-Ended 1:1 S/G Pattern Application – Insertion Loss

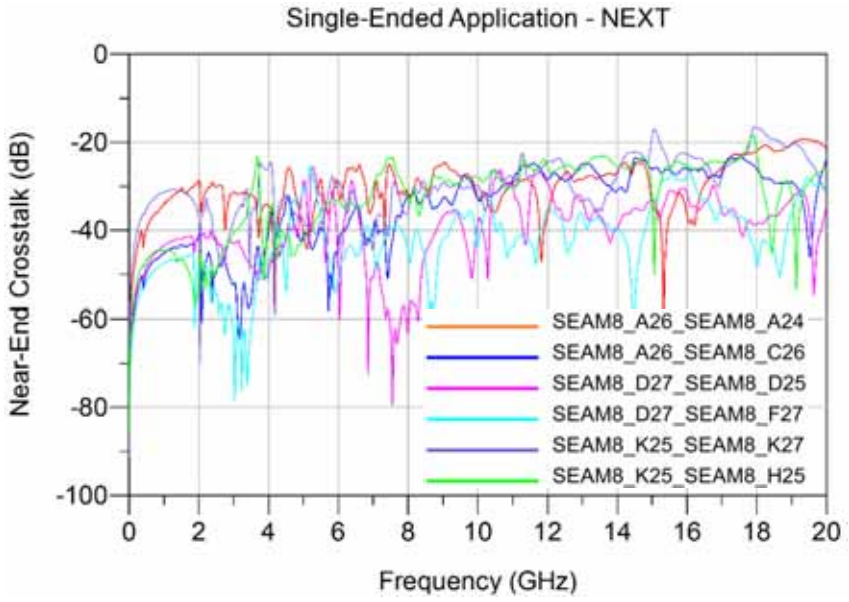


Single-Ended 1:1 S/G Pattern Application – Return Loss

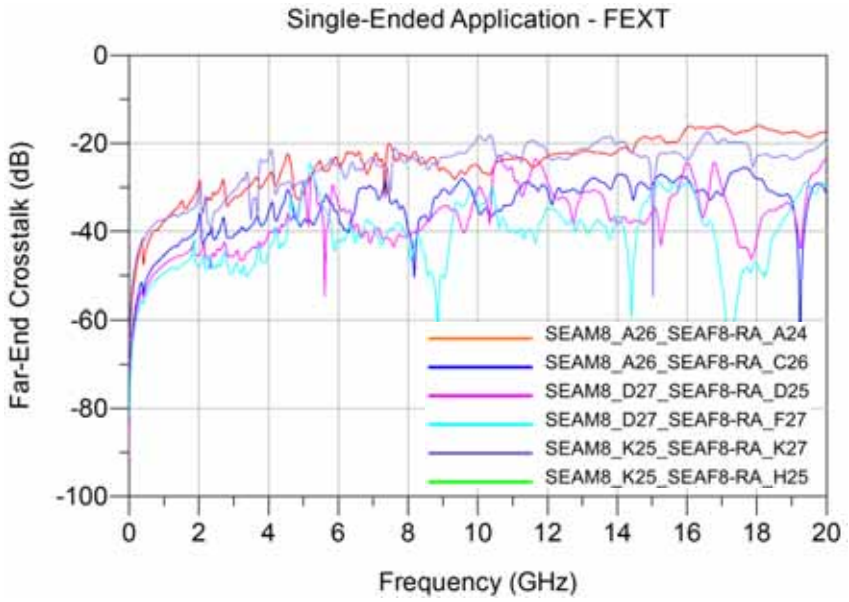


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Single-Ended 1:1 S/G Pattern Application – NEXT

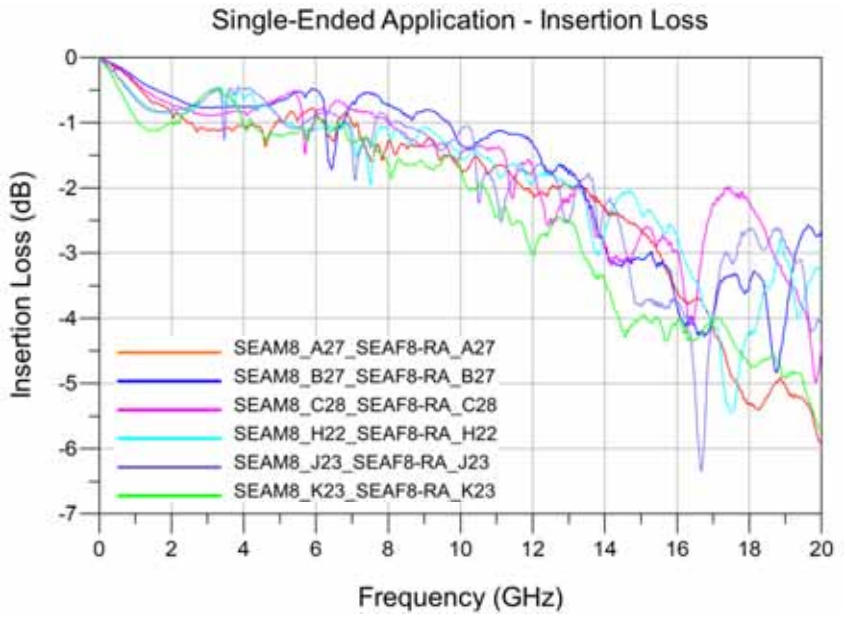


Single-Ended 1:1 S/G Pattern Application – FEXT

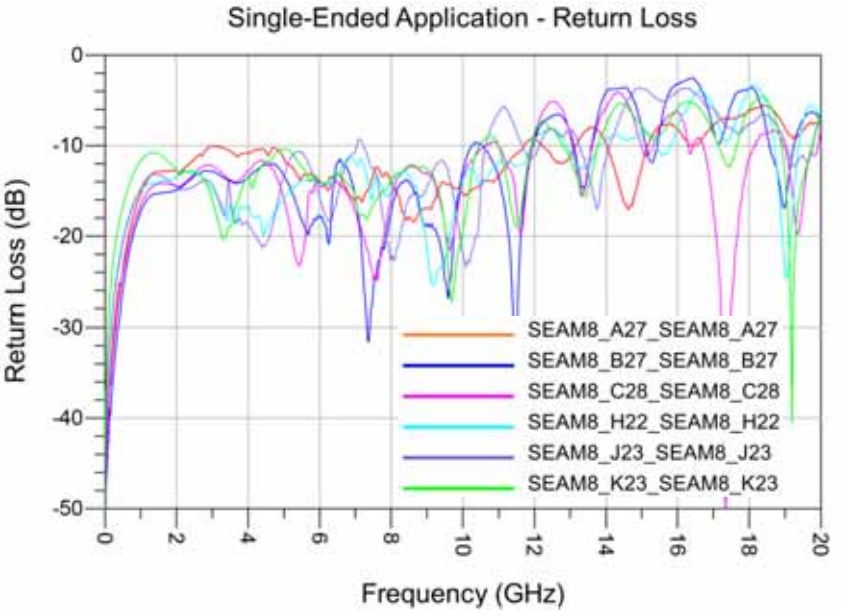


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Single-Ended 2:1 S/G Pattern Application – Insertion Loss

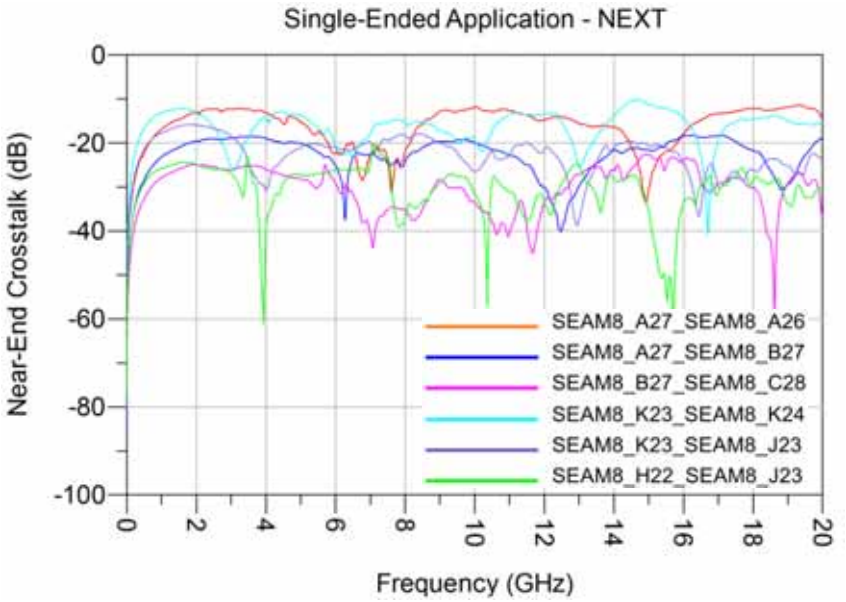


Single-Ended 2:1 S/G Pattern Application – Return Loss

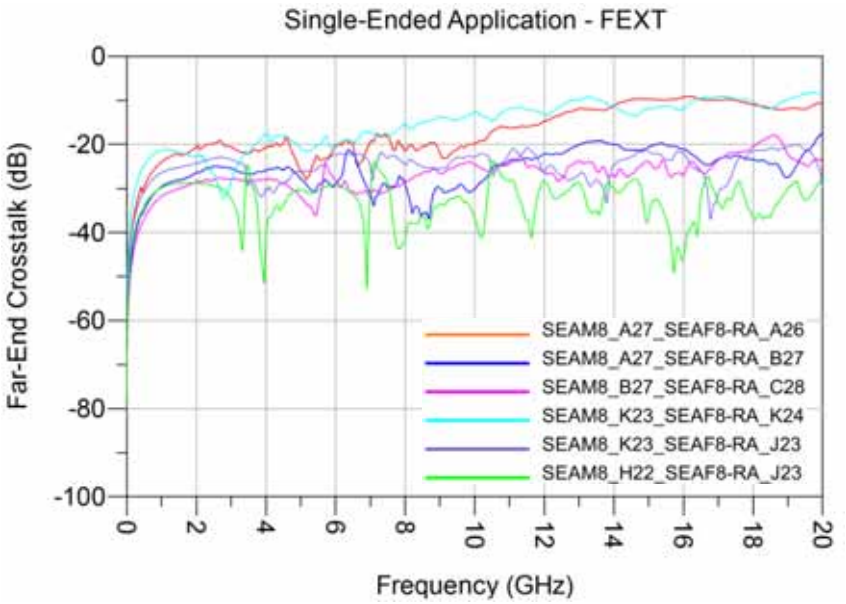


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Single-Ended 2:1 S/G Pattern Application – NEXT

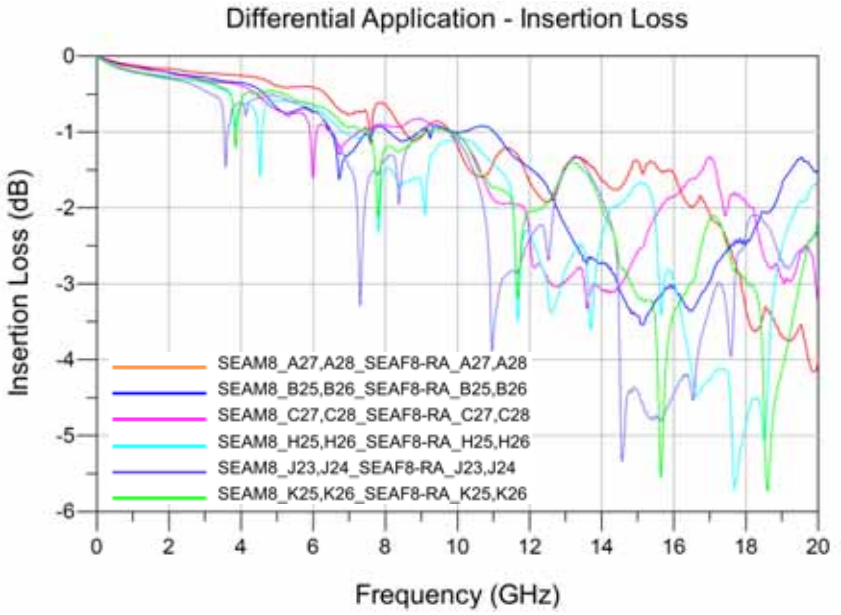


Single-Ended 2:1 S/G Pattern Application – FEXT

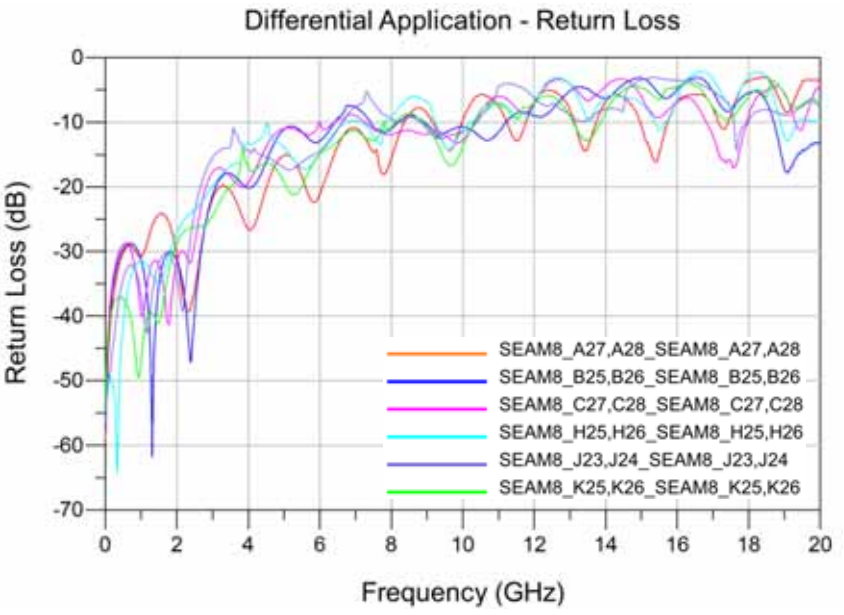


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Differential Optimal Horizontal Application – Insertion Loss

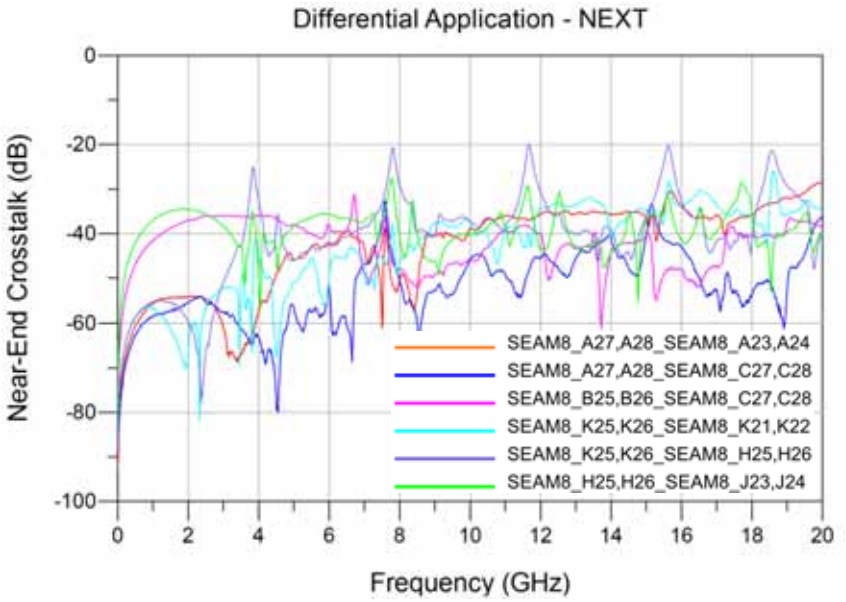


Differential Optimal Horizontal Application – Return Loss

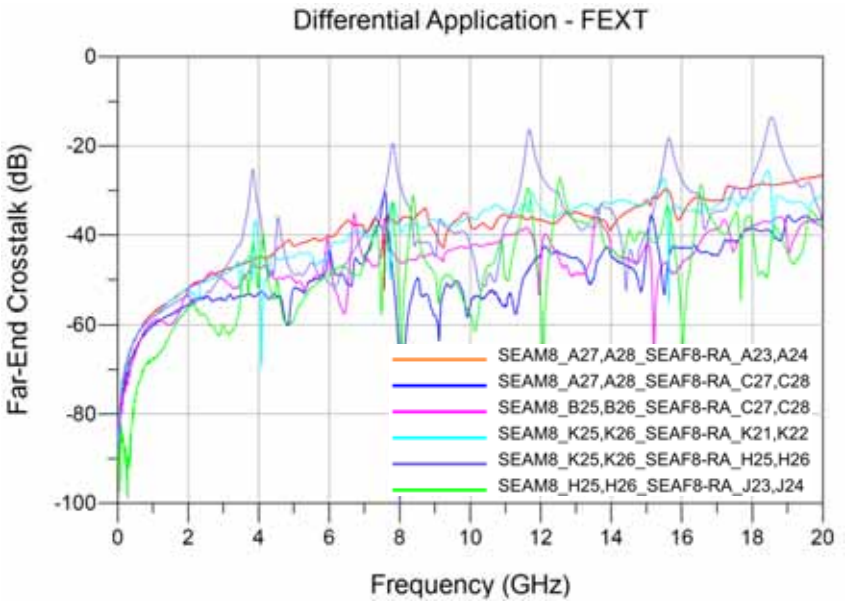


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Differential Optimal Horizontal Application – NEXT

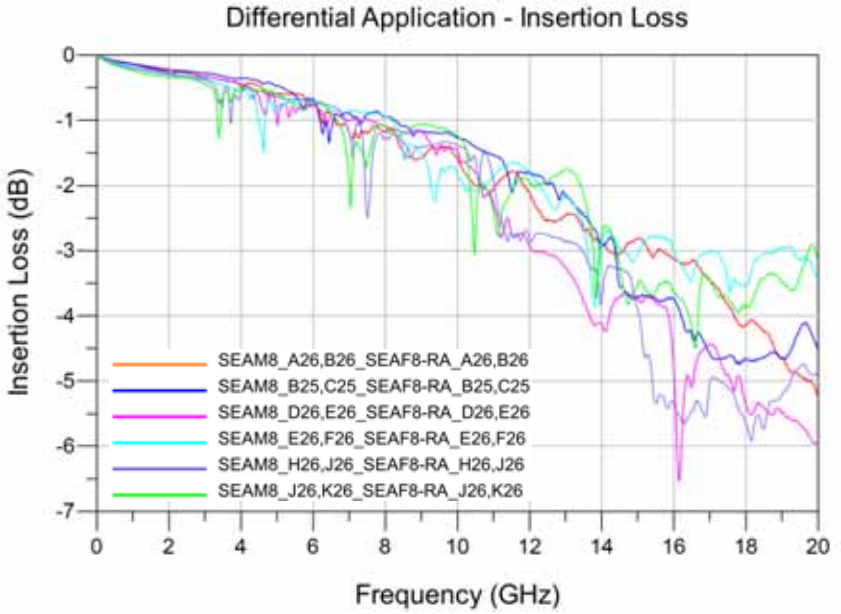


Differential Optimal Horizontal Application – FEXT

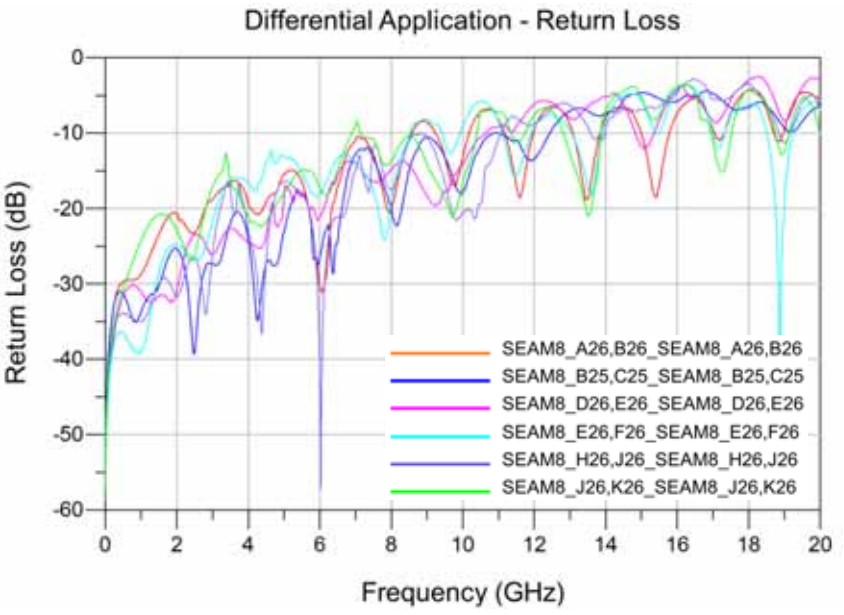


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Differential Optimal Vertical Application – Insertion Loss

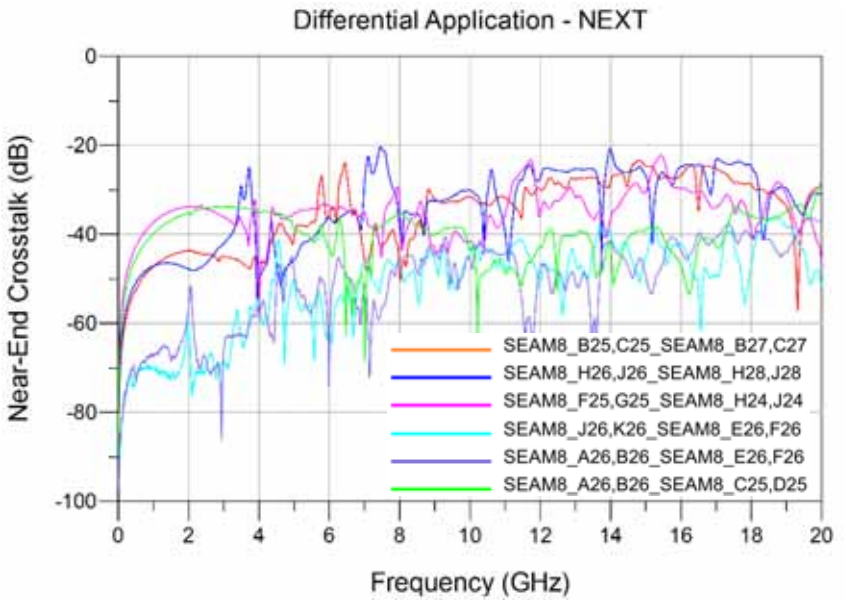


Differential Optimal Vertical Application – Return Loss

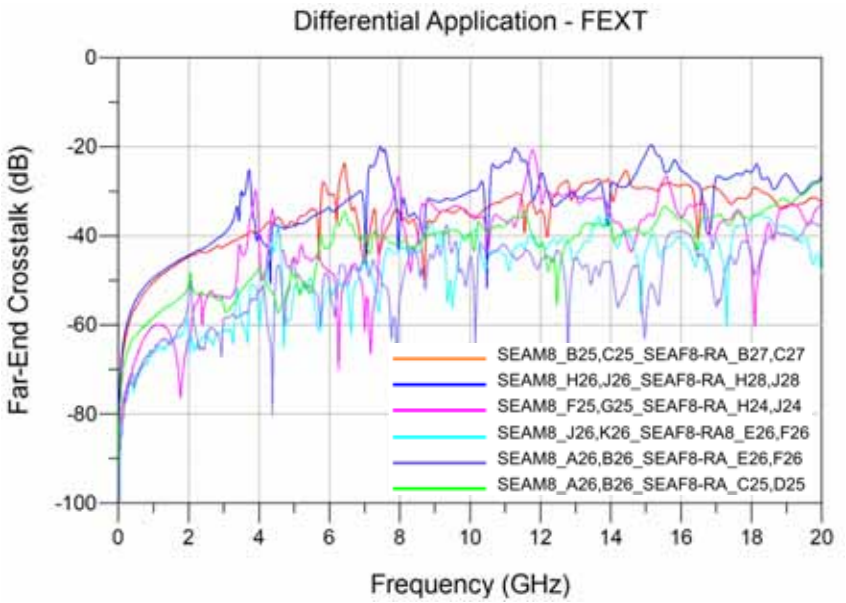


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Differential Optimal Vertical Application – NEXT

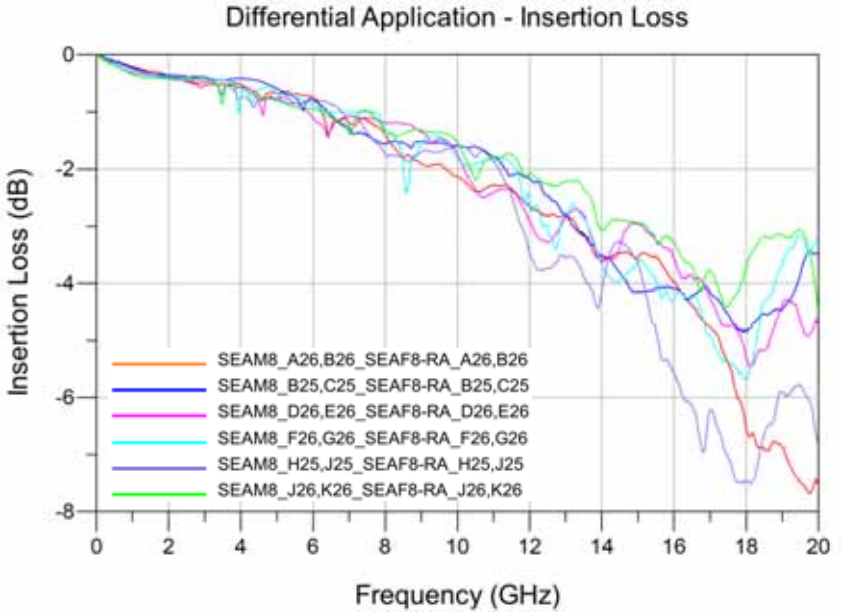


Differential Optimal Vertical Application – FEXT

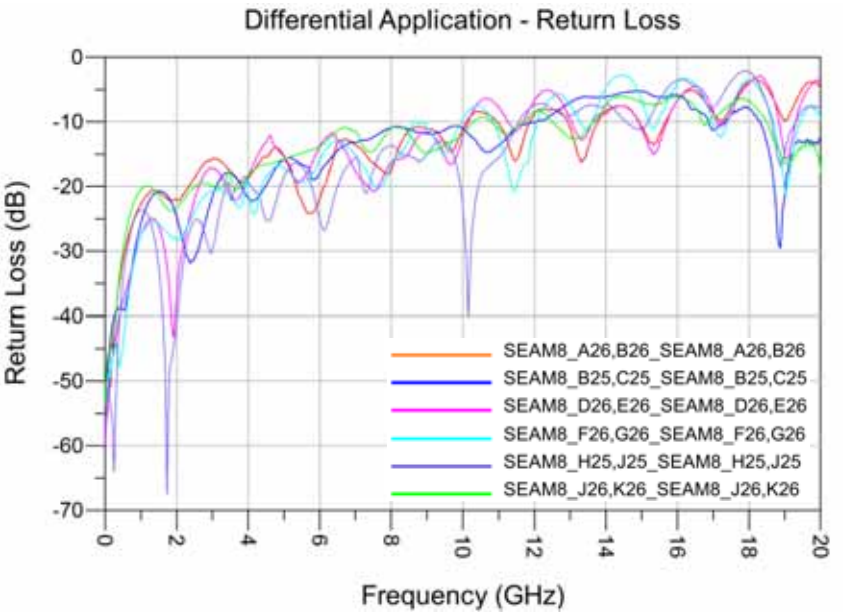


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Differential High Density Vertical Application – Insertion Loss

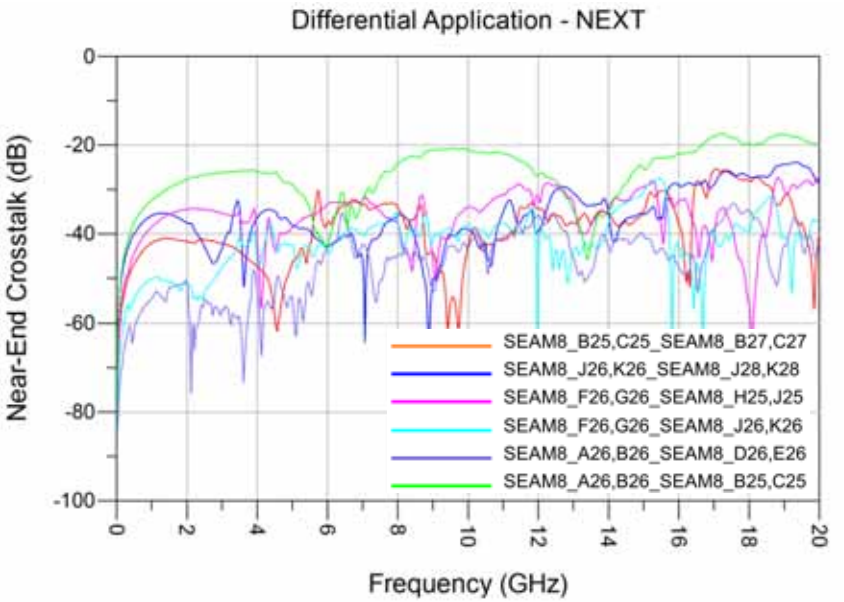


Differential High Density Vertical Application – Return Loss

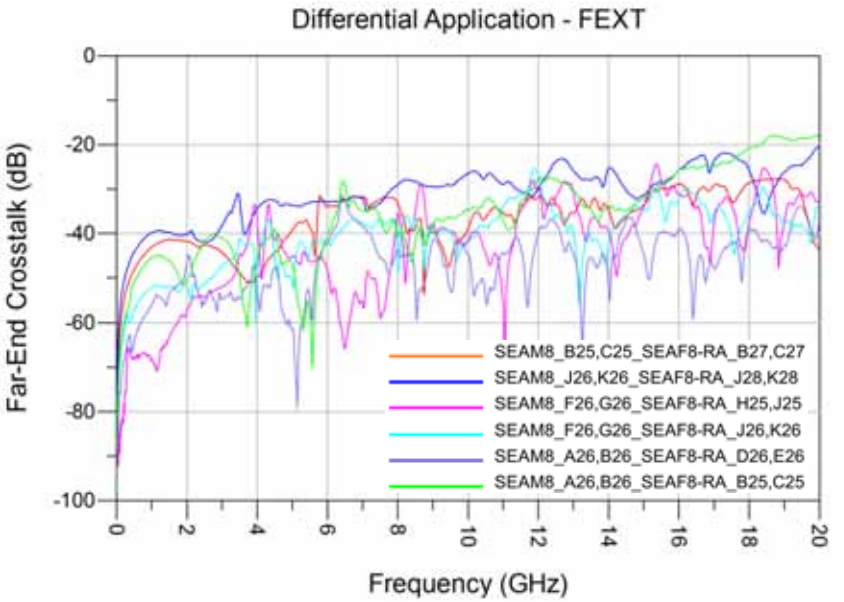


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Differential High Density Vertical Application – NEXT



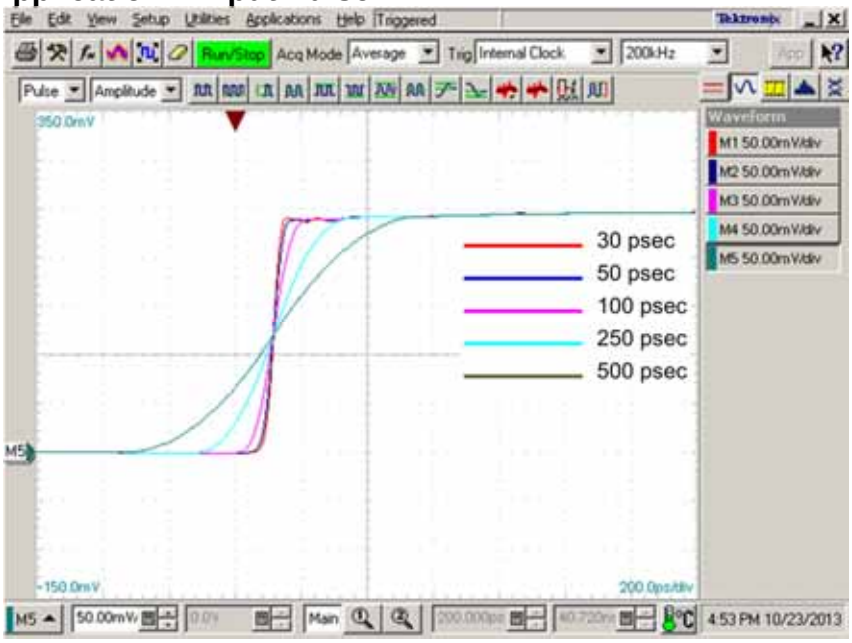
Differential High Density Vertical Application – FEXT



Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

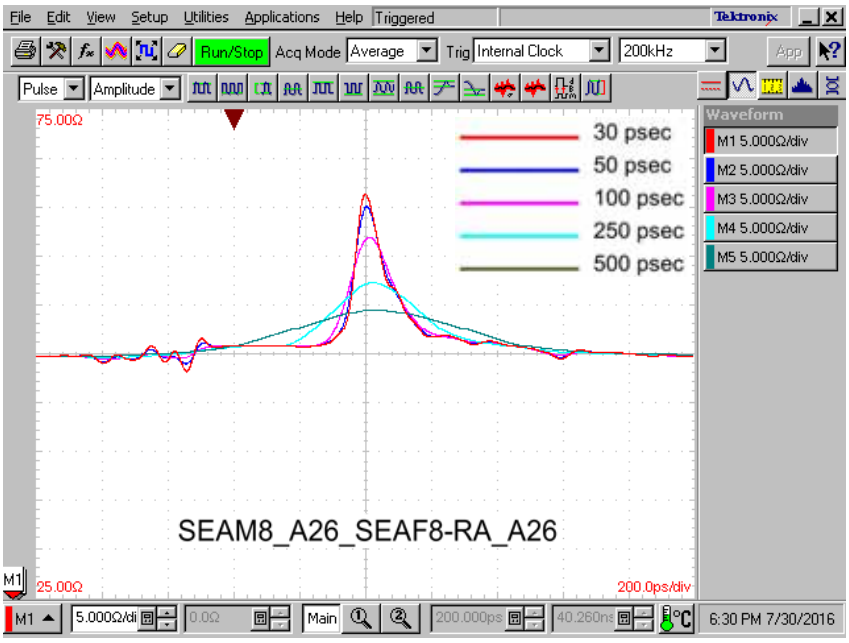
Appendix B – Time Domain Response Graphs

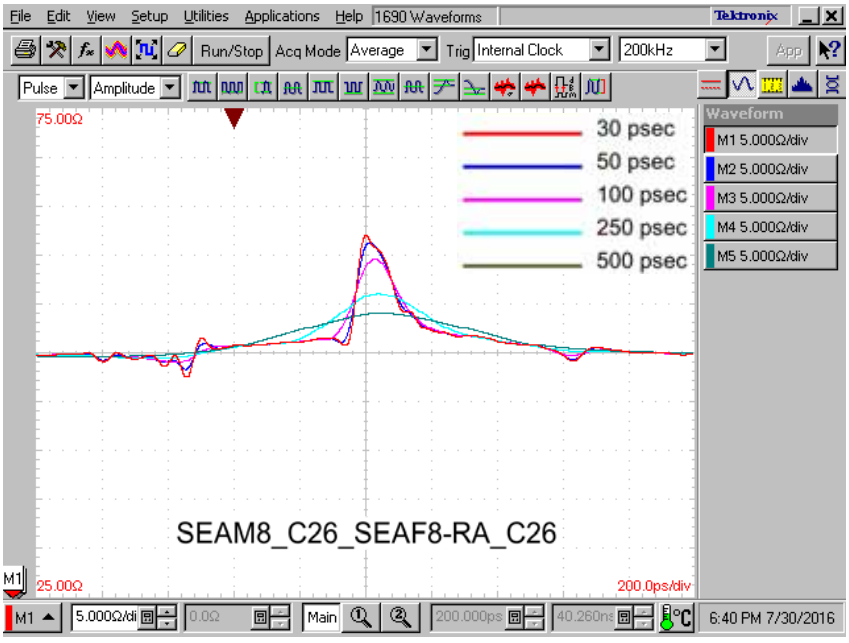
Single-Ended Application – Input Pulse



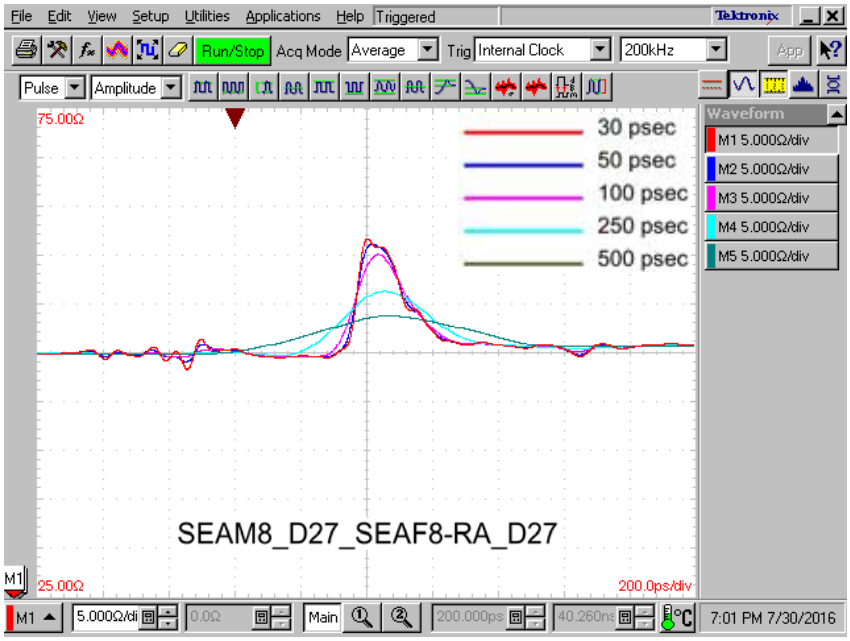
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

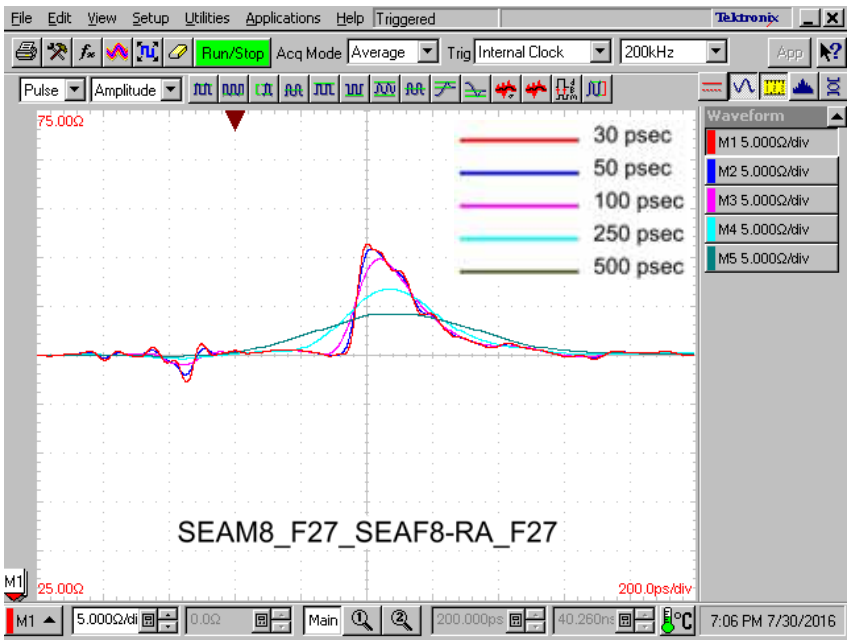
Single-Ended 1:1 S/G Pattern Application – Impedance



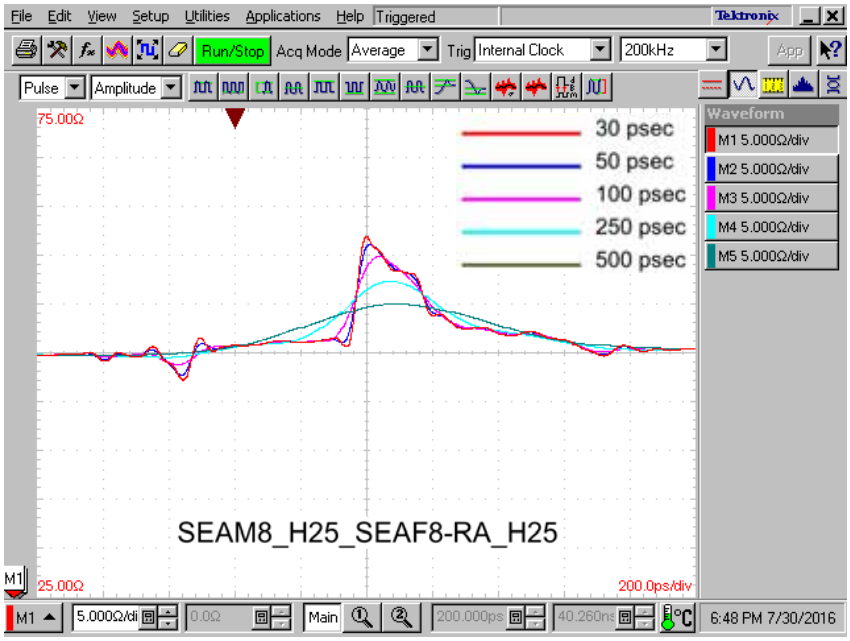


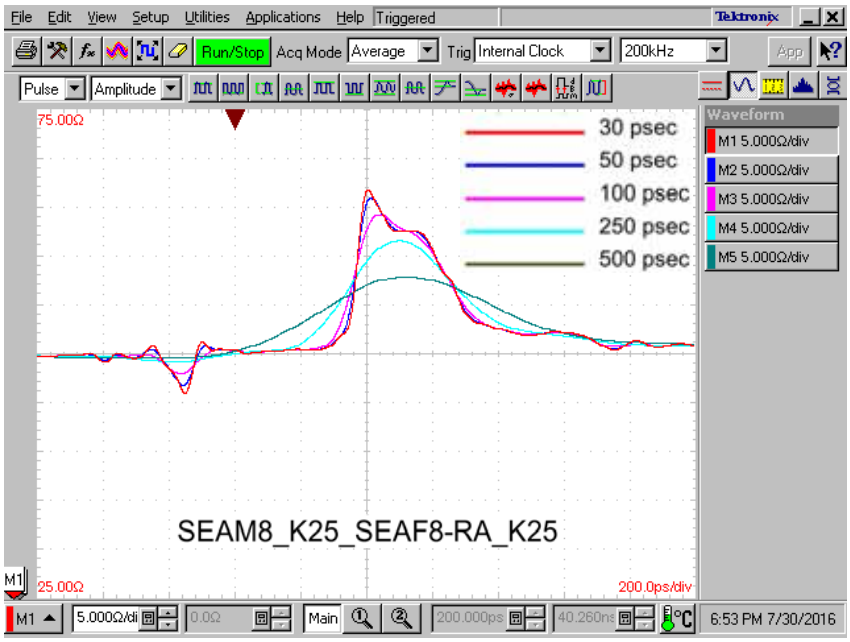
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female





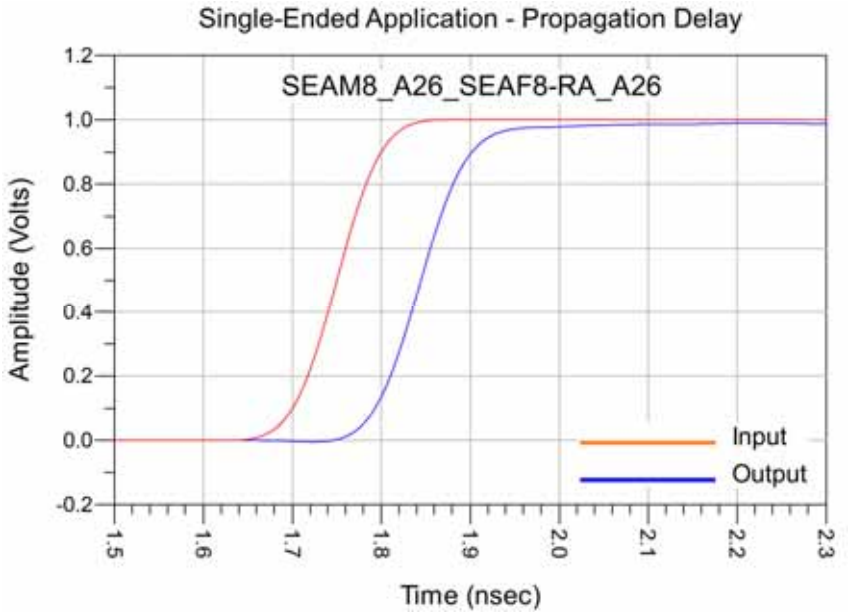
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

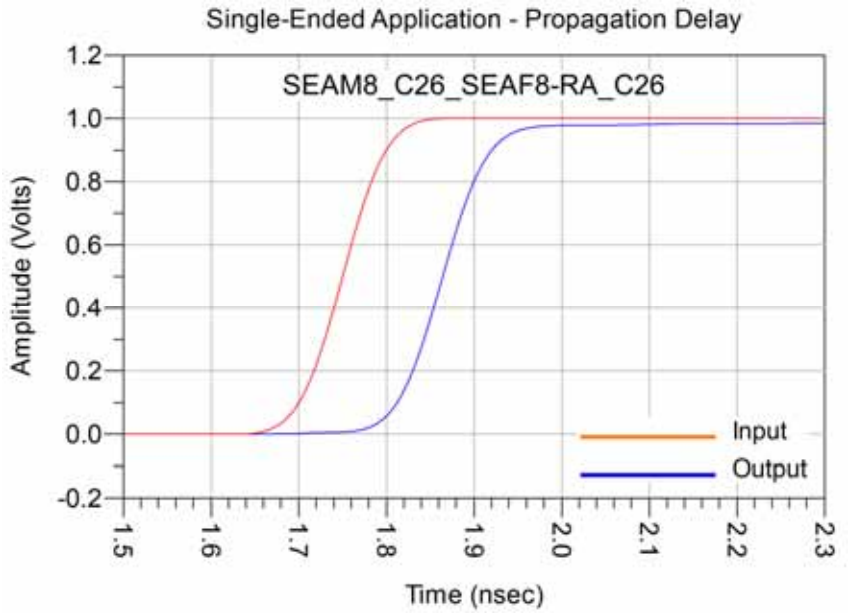




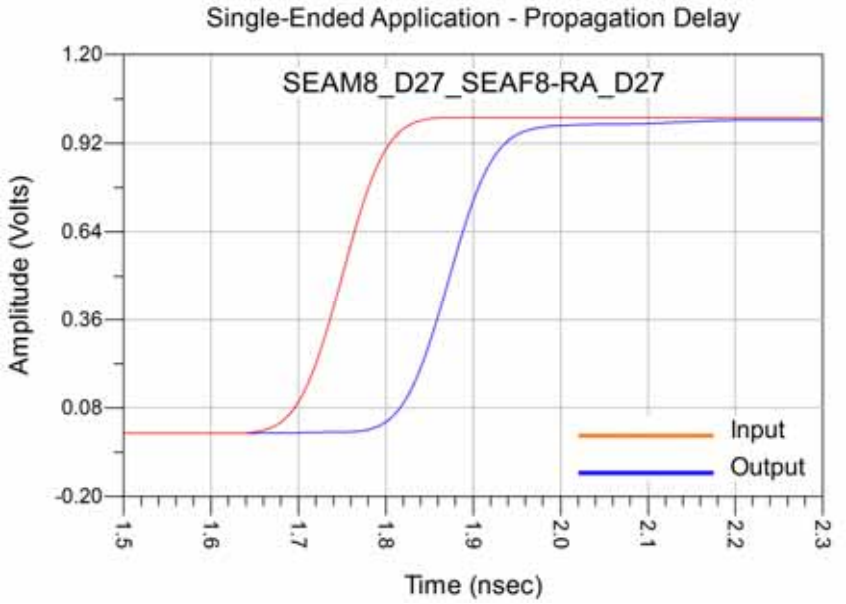
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

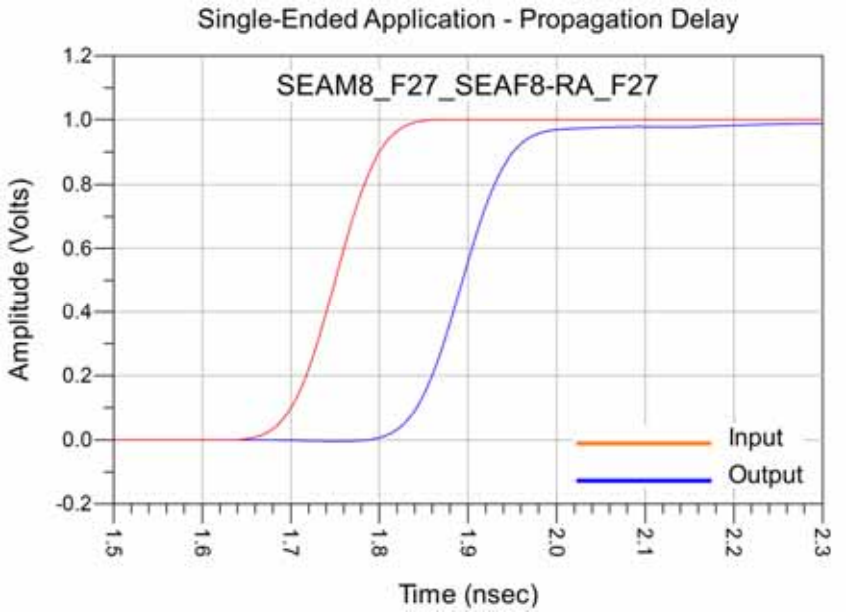
Single-Ended 1:1 S/G Pattern Application – Propagation Delay



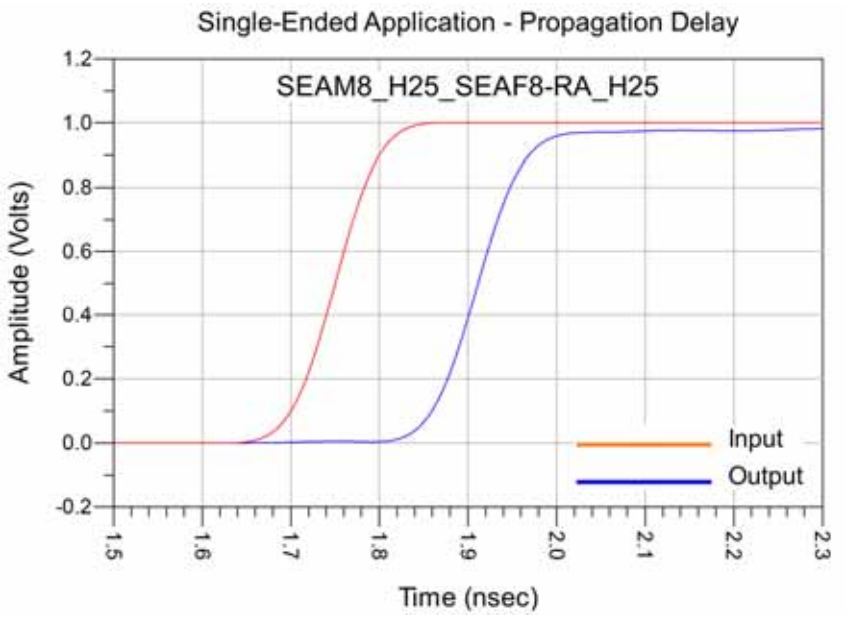


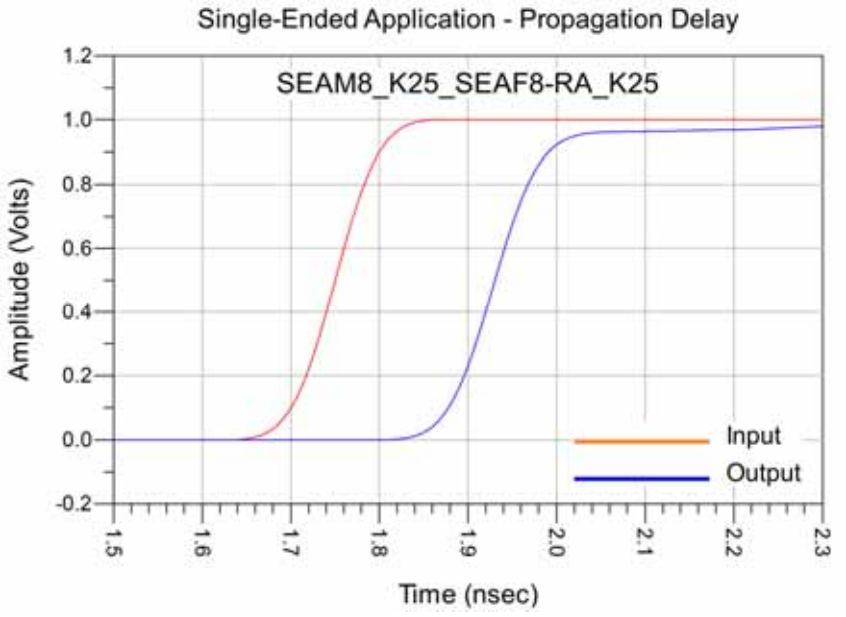
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female





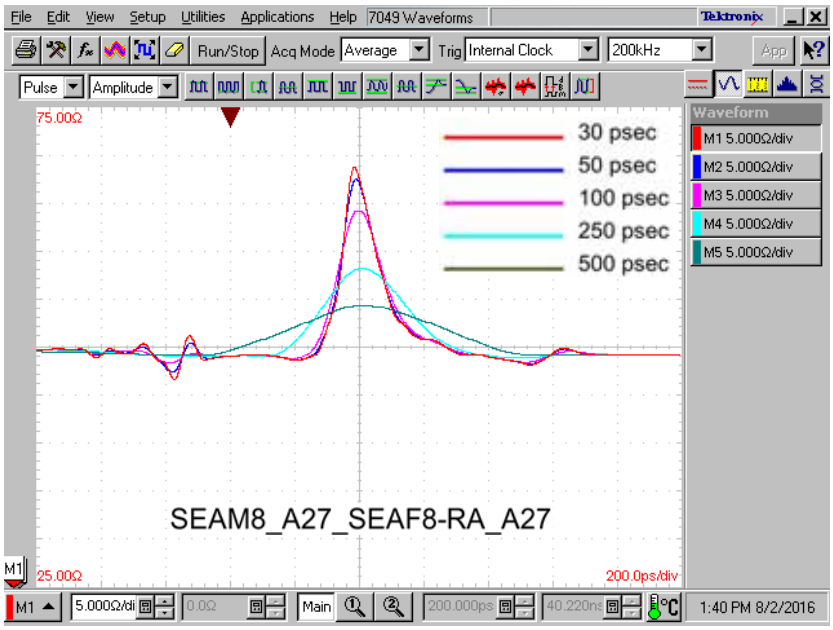
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

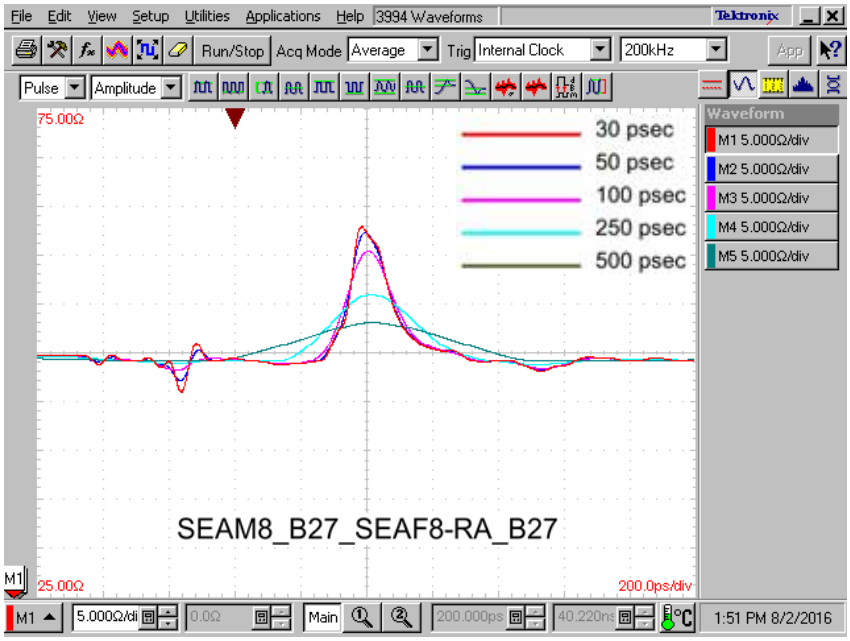




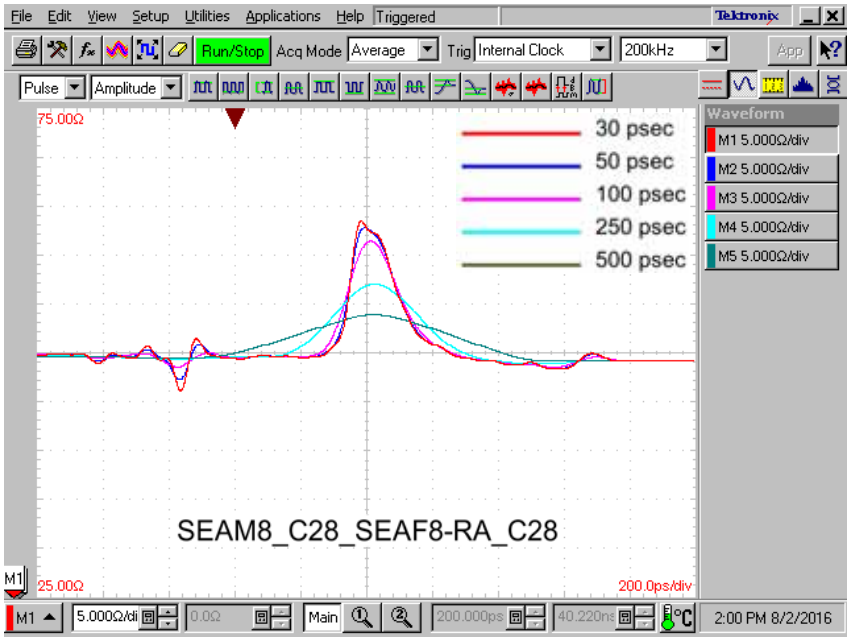
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

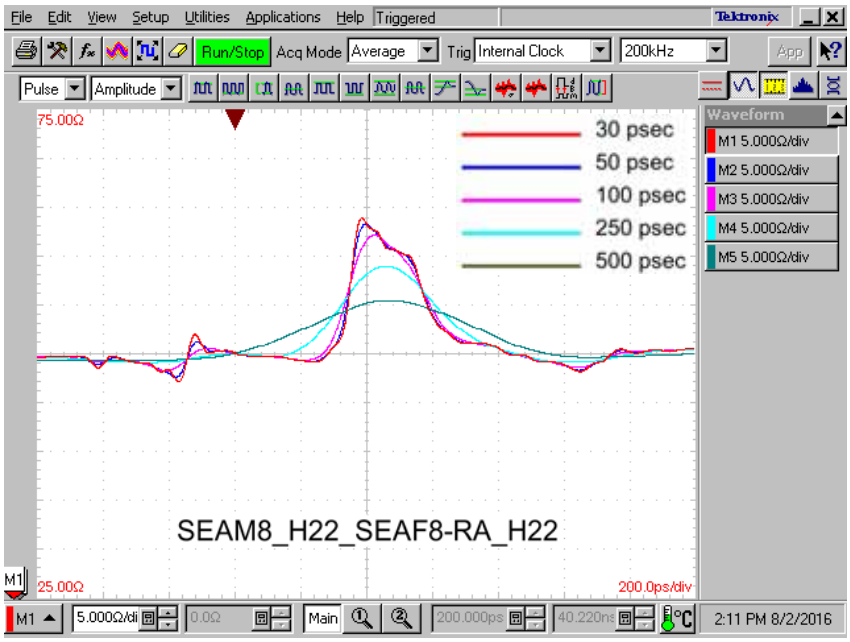
Single-Ended 2:1 S/G Pattern Application – Impedance



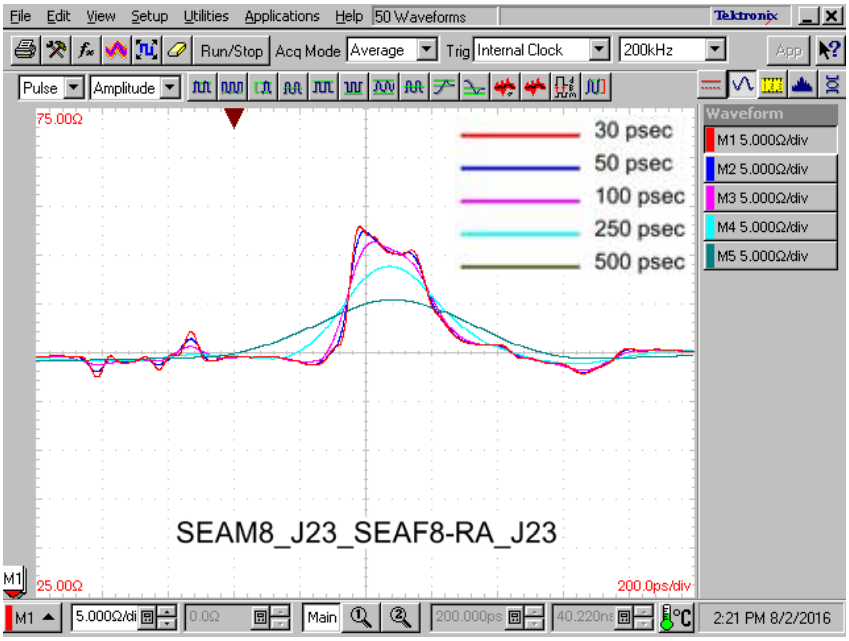


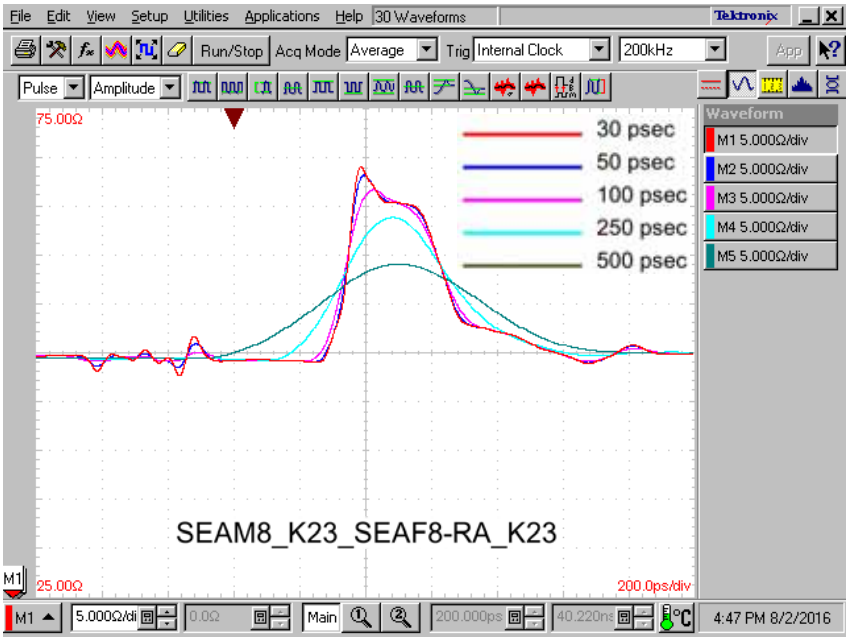
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female





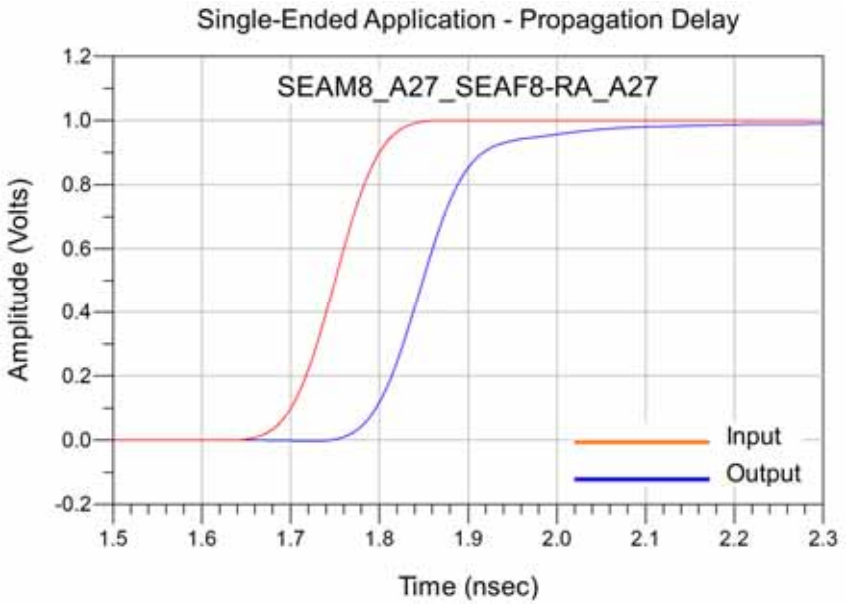
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

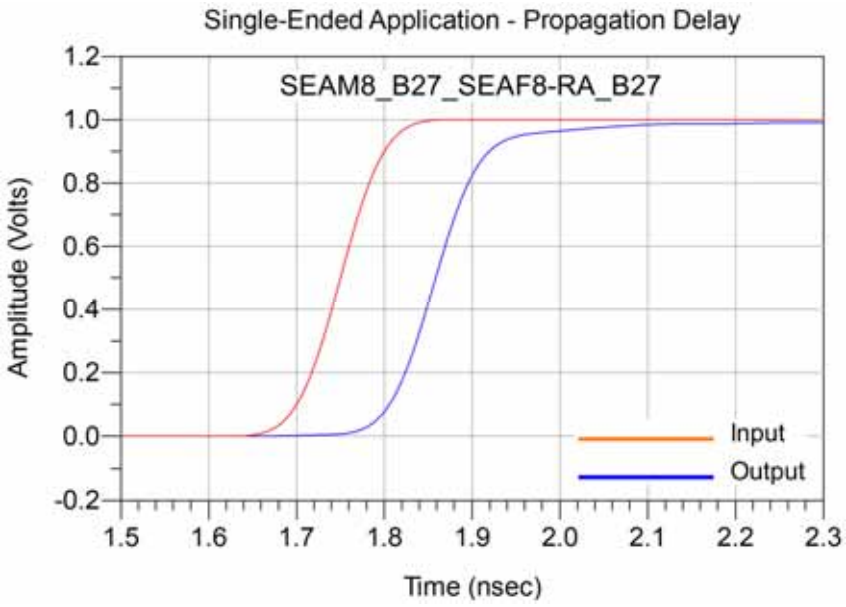




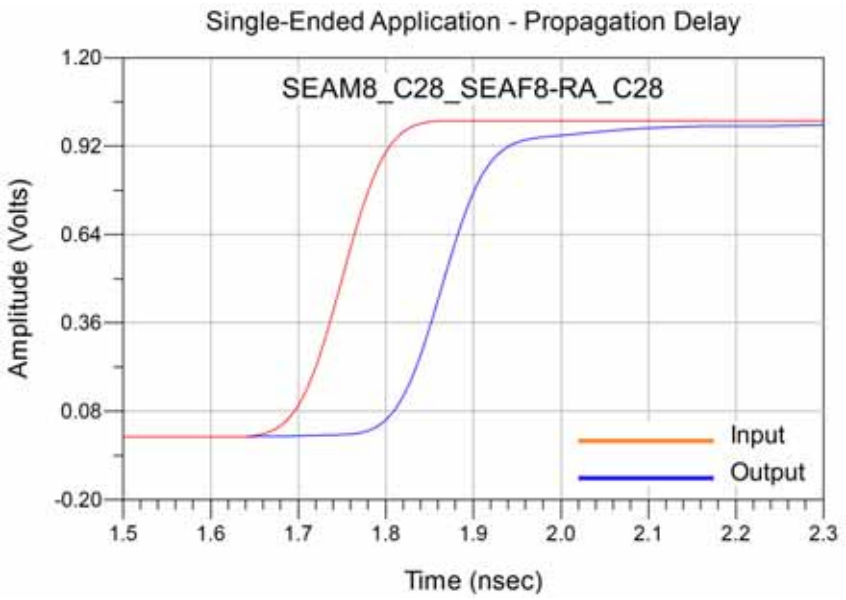
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

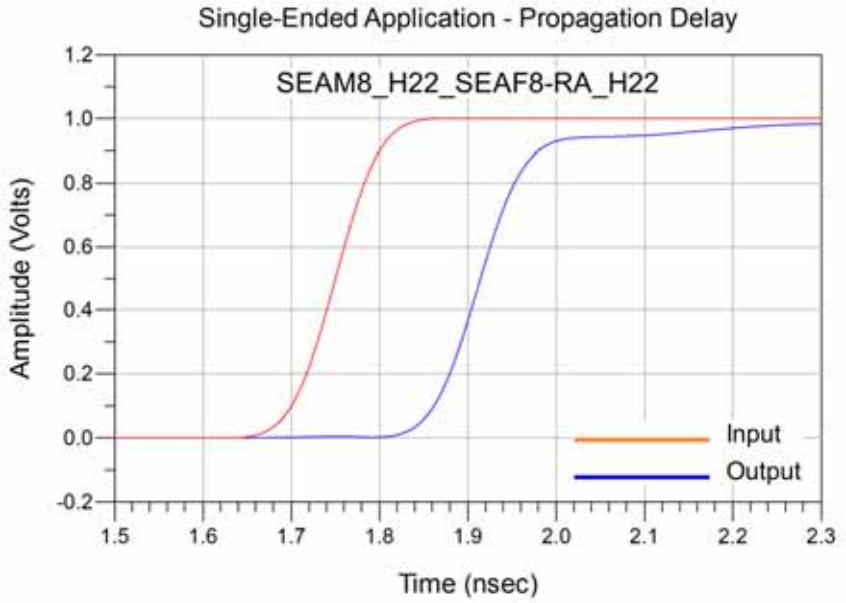
Single-Ended 2:1 S/G Pattern Application – Propagation Delay



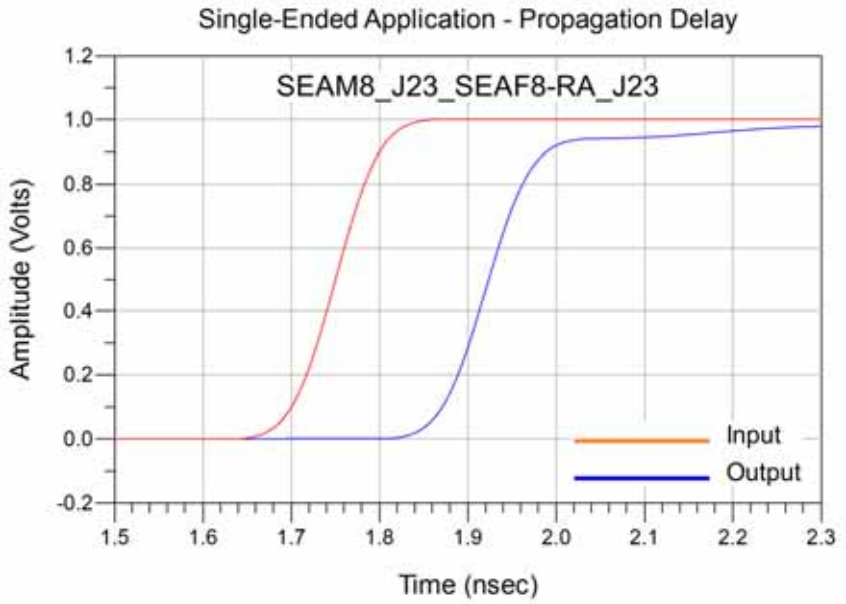


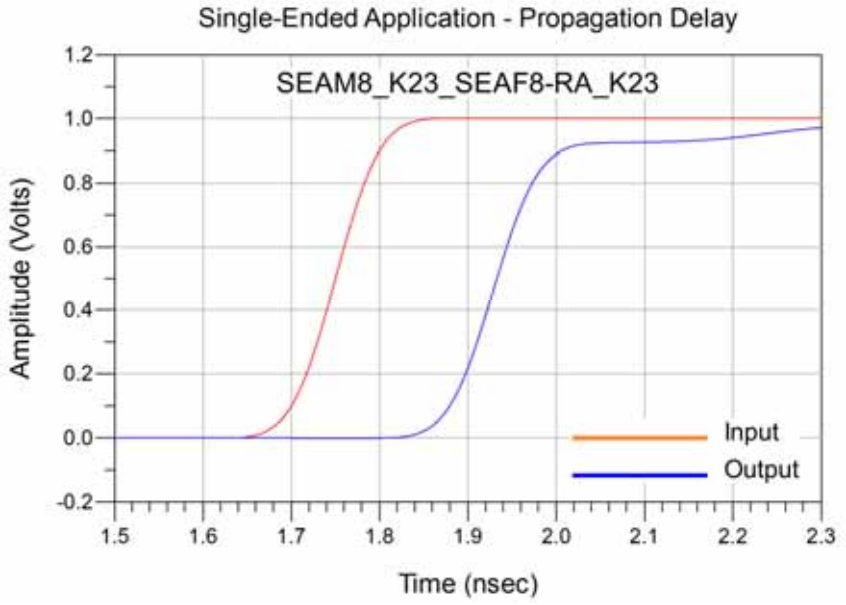
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female





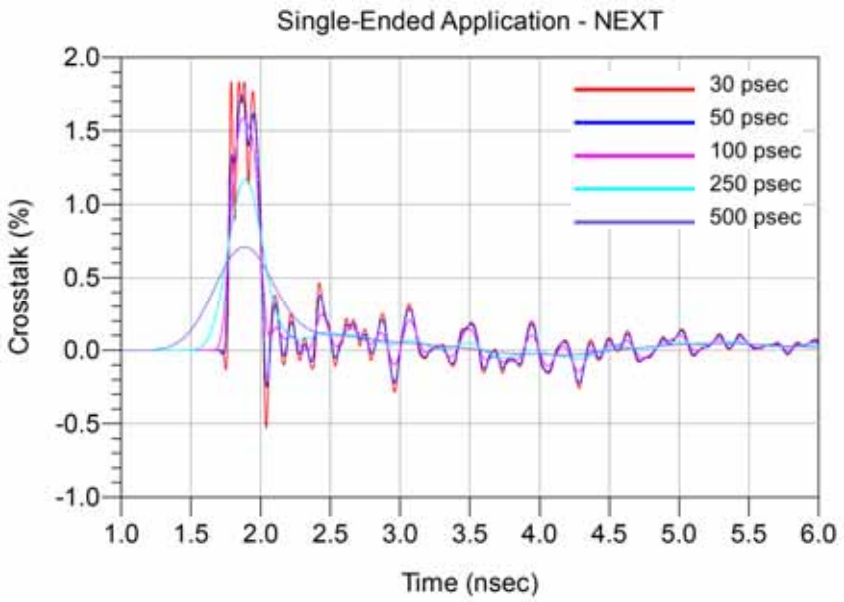
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female



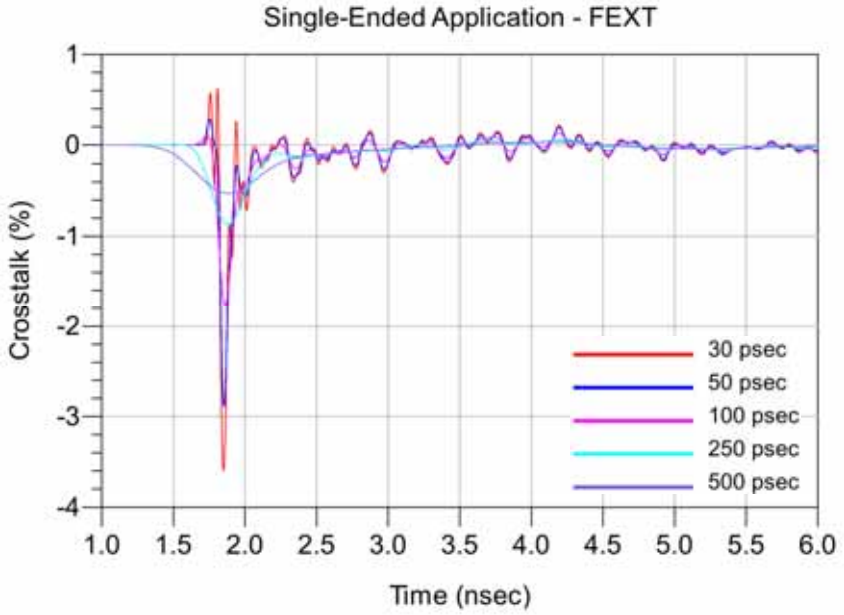


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Single-Ended 1:1 S/G Pattern Application – NEXT, SEAM8_A26_SEAM8_A24

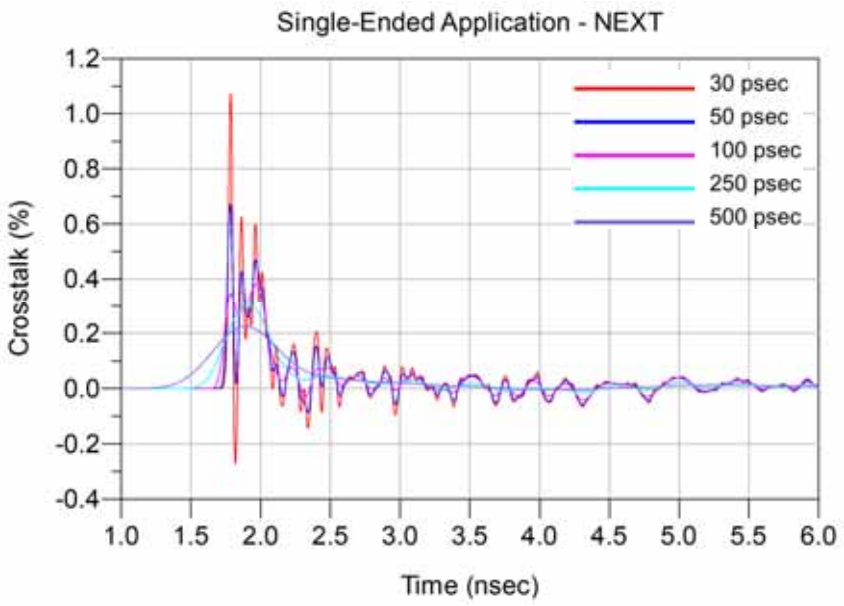


Single-Ended 1:1 S/G Pattern Application – FEXT, SEAM8_A26_SEAF8-RA_A24

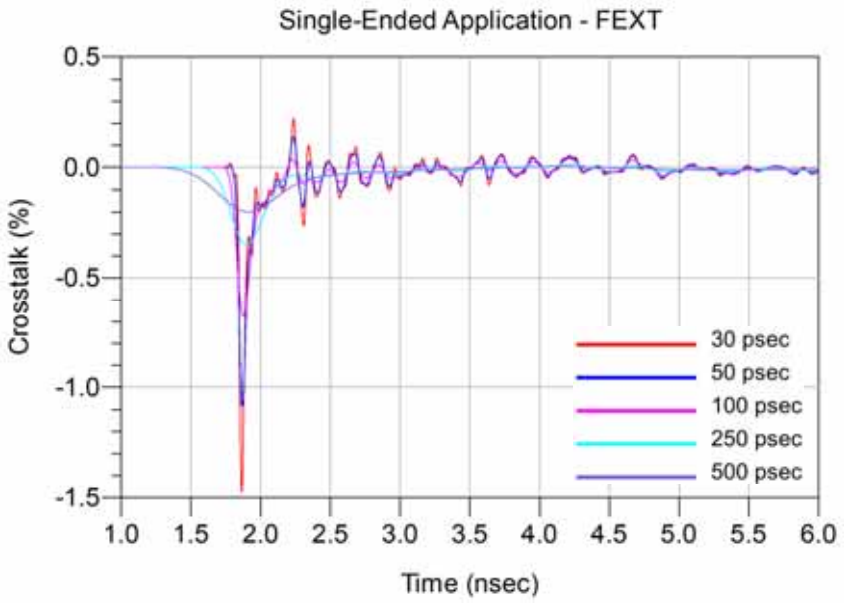


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Single-Ended 1:1 S/G Pattern Application – NEXT, SEAM8_A26_SEAM8_C26

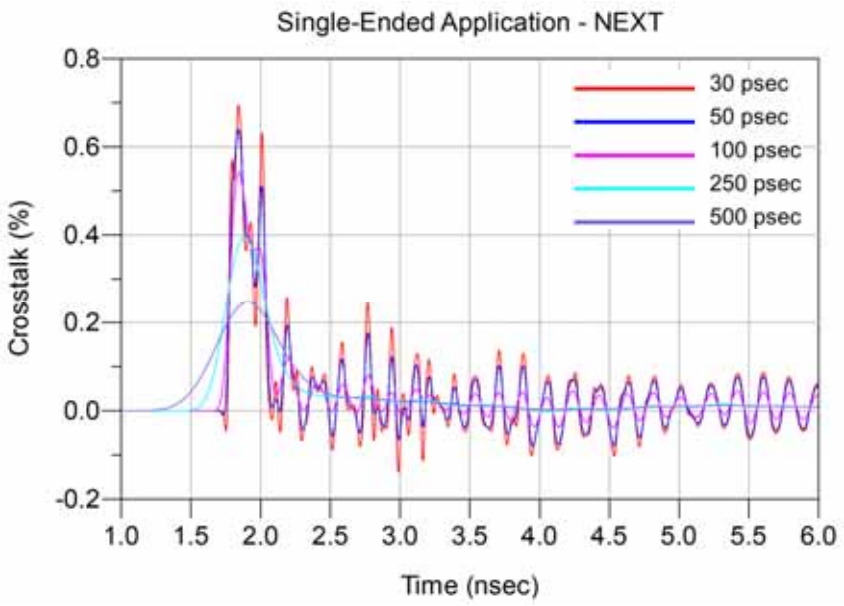


Single-Ended 1:1 S/G Pattern Application – FEXT, SEAM8_A26_SEAF8-RA_C26

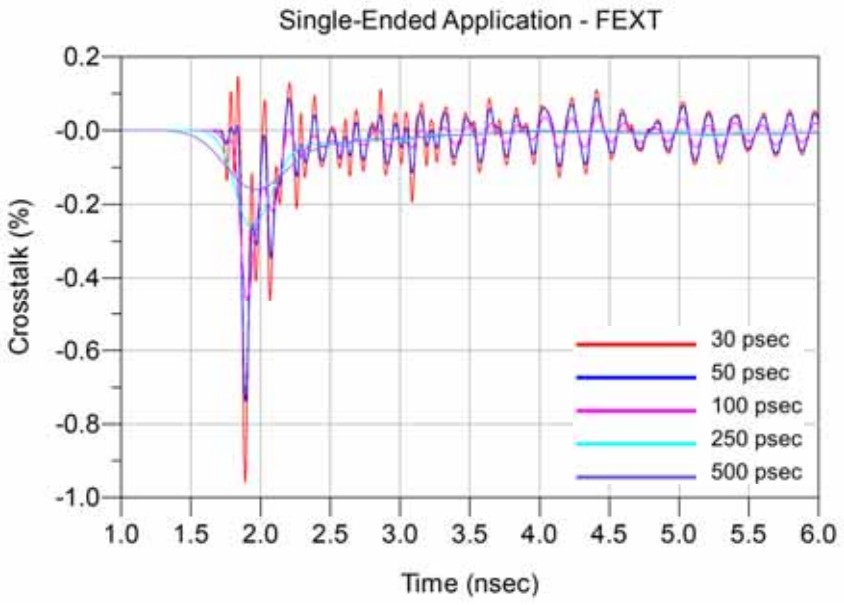


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Single-Ended 1:1 S/G Pattern Application – NEXT, SEAM8_D27_SEAM8_D25

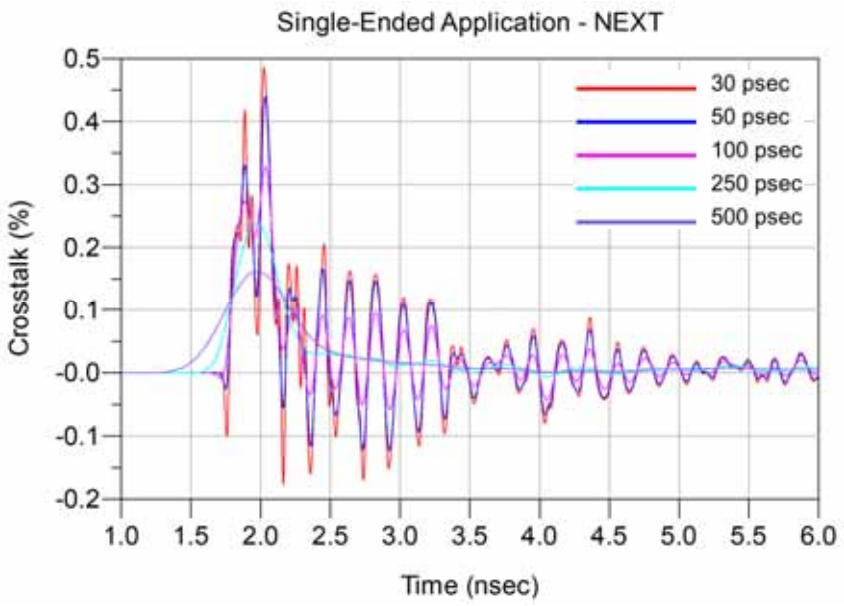


Single-Ended 1:1 S/G Pattern Application – FEXT, SEAM8_D27_SEAF8-RA_D25

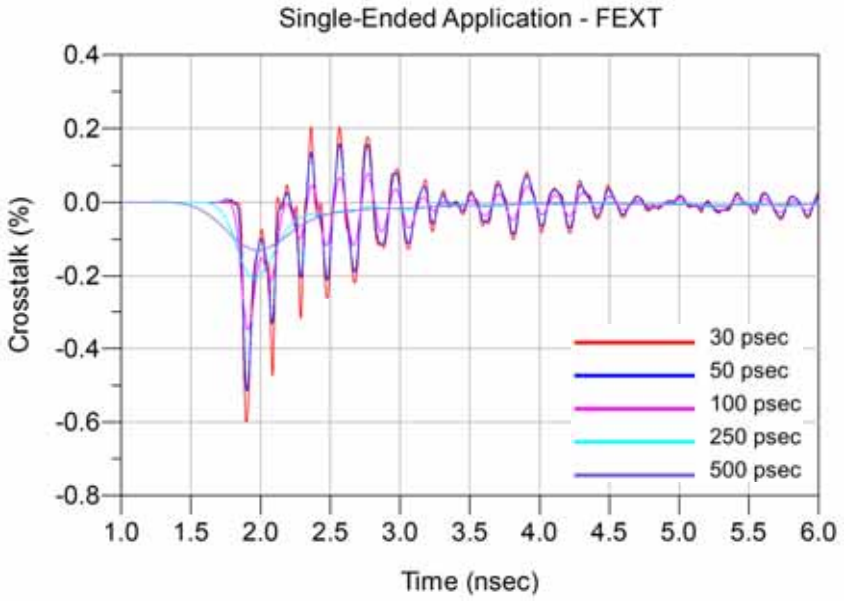


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Single-Ended 1:1 S/G Pattern Application – NEXT, SEAM8_D27_SEAM8 _F27

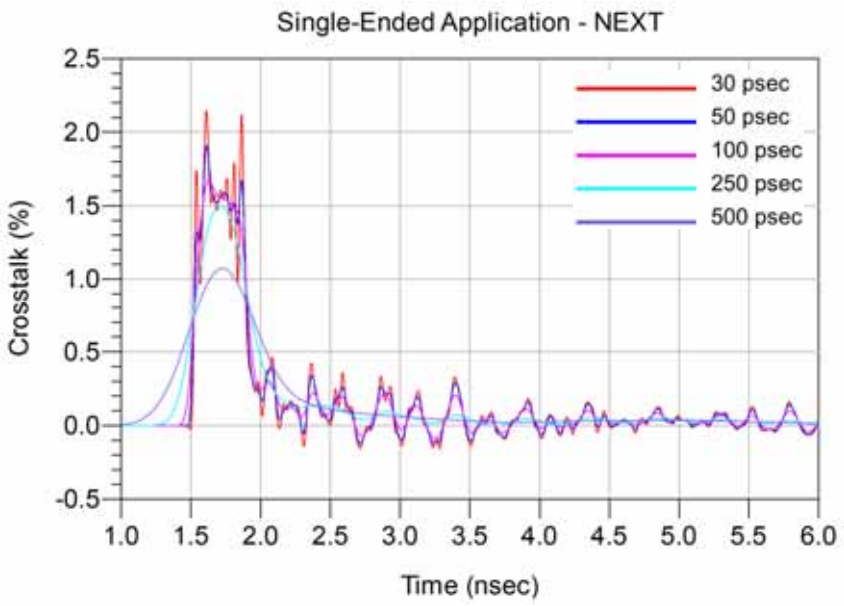


Single-Ended 1:1 S/G Pattern Application – FEXT, SEAM8_D27_SEAF8 -RA_F27

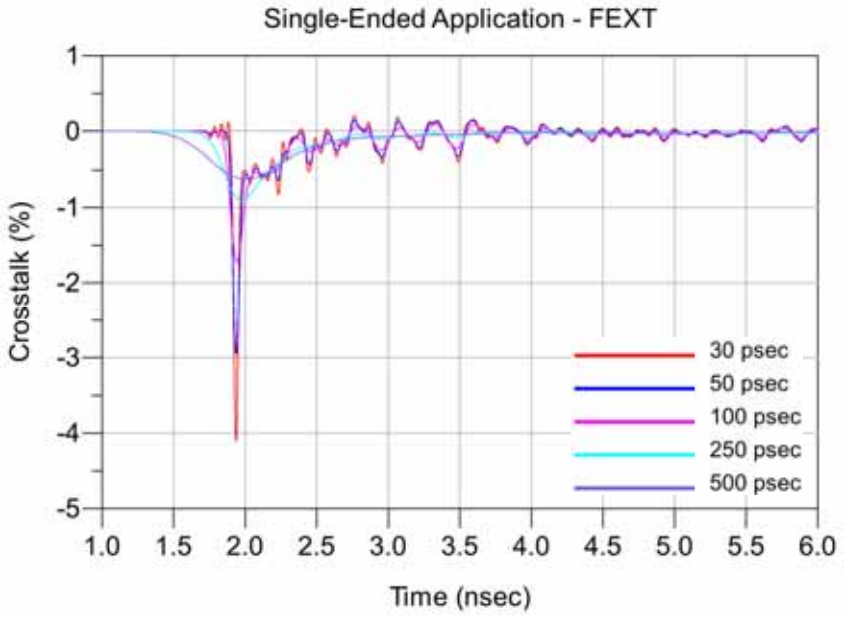


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Single-Ended 1:1 S/G Pattern Application – NEXT, SEAM8_K25_SEAM8_K27

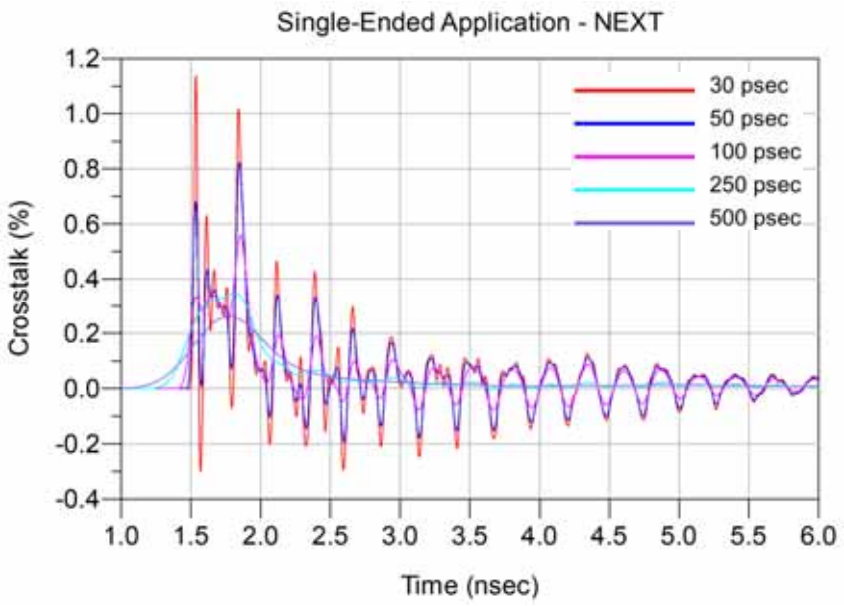


Single-Ended 1:1 S/G Pattern Application – FEXT, SEAM8_K25_SEAF8-RA_K27

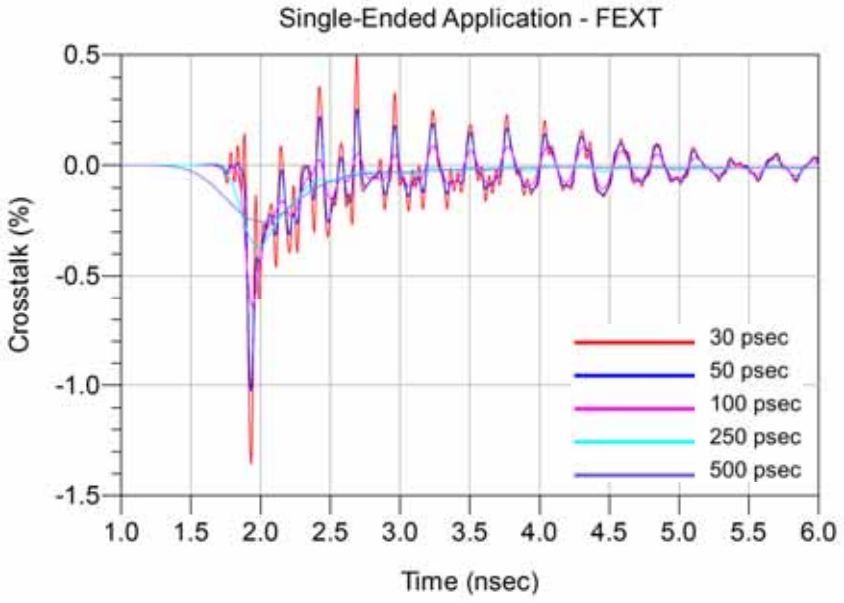


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Single-Ended 1:1 S/G Pattern Application – NEXT, SEAM8_K25_SEAM8_H25

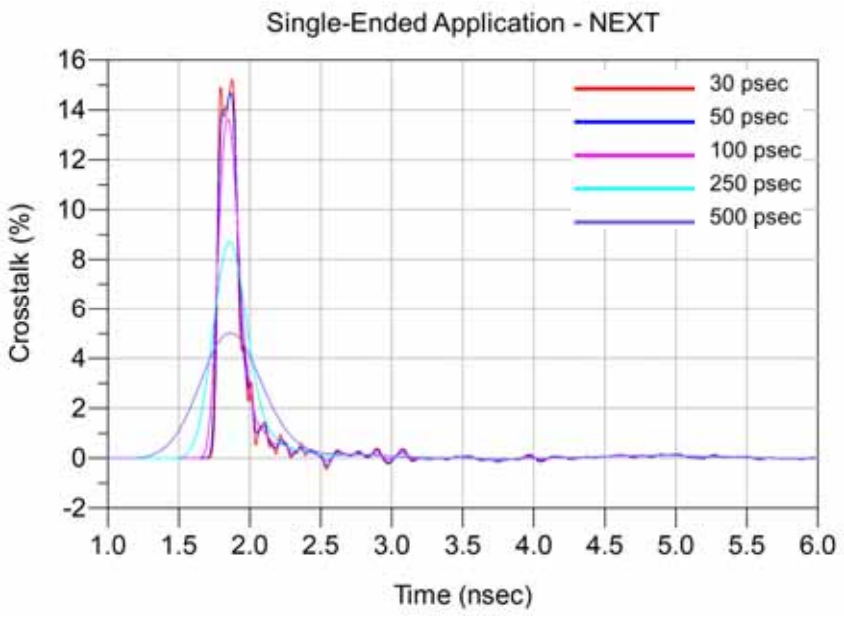


Single-Ended 1:1 S/G Pattern Application – FEXT, SEAM8_K25_SEAF8-RA_H25

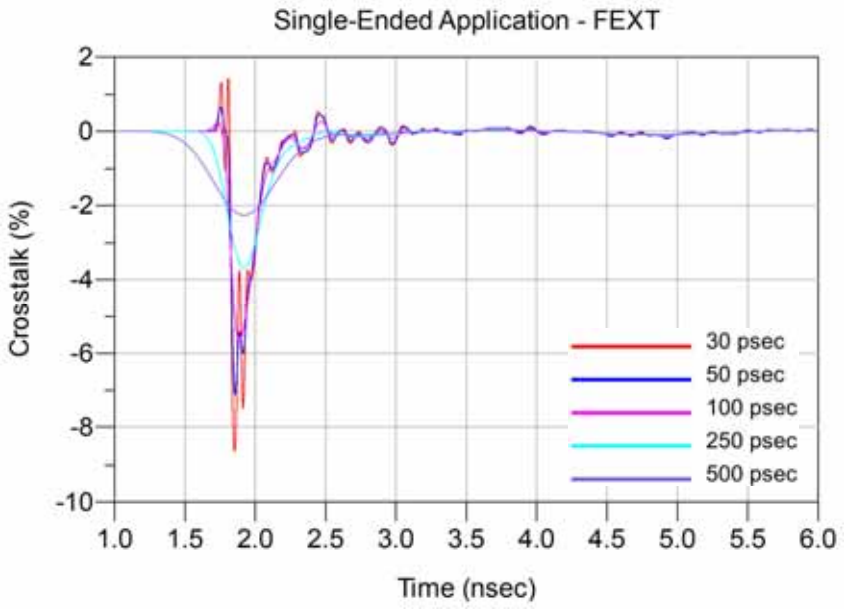


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Single-Ended 2:1 S/G Pattern Application – NEXT, SEAM8_A27_SEAM8_A26

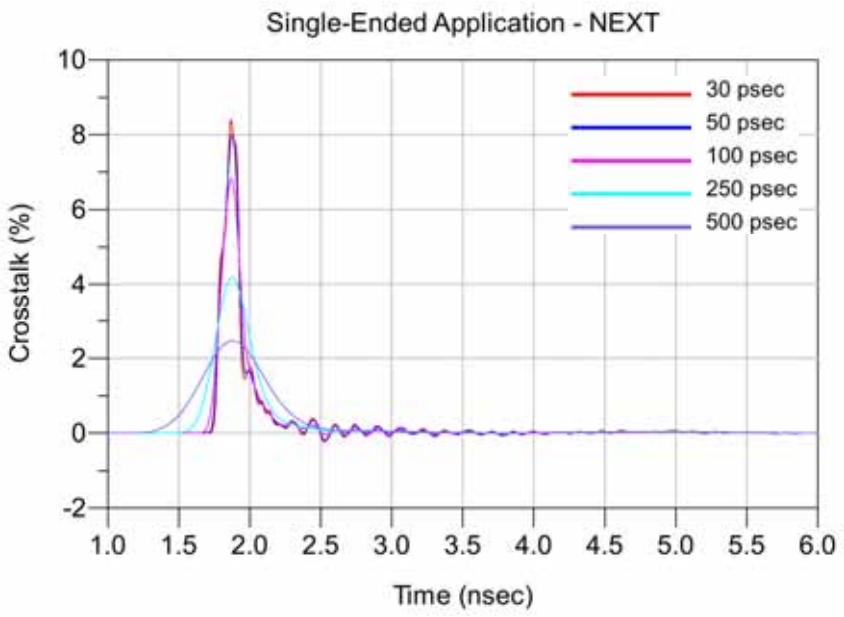


Single-Ended 2:1 S/G Pattern Application – FEXT, SEAM8_A27_SEAF8-RA_A26

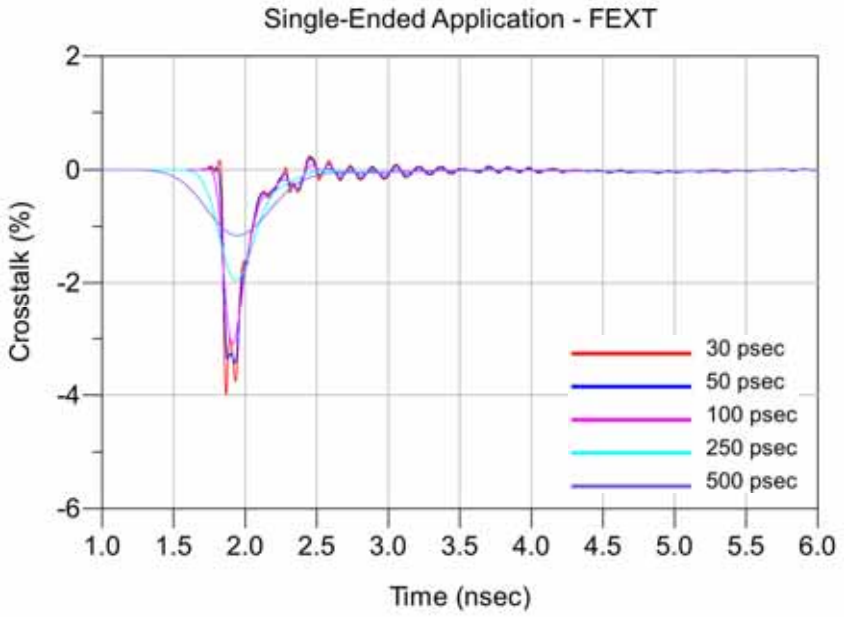


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Single-Ended 2:1 S/G Pattern Application – NEXT, SEAM8_A27_SEAM8_B27

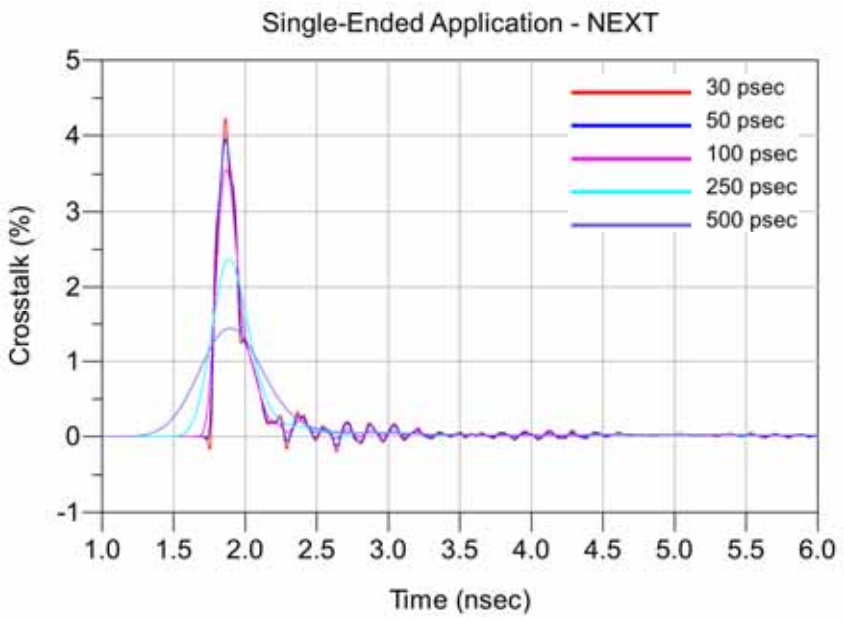


Single-Ended 2:1 S/G Pattern Application – FEXT, SEAM8_A27_SEAF8-RA_B27

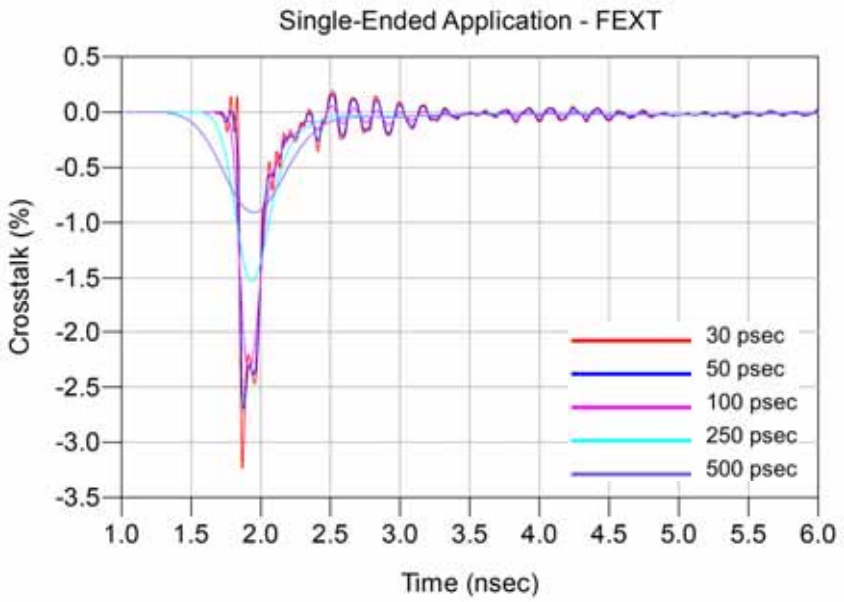


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Single-Ended 2:1 S/G Pattern Application – NEXT, SEAM8_B27_SEAM8_C28

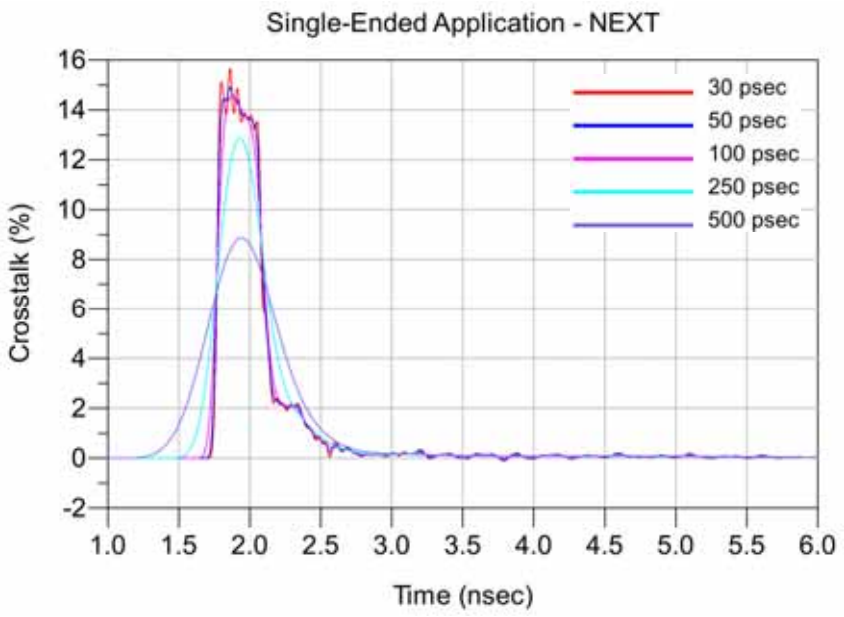


Single-Ended 2:1 S/G Pattern Application – FEXT, SEAM8_B27_SEAF8-RA_C28

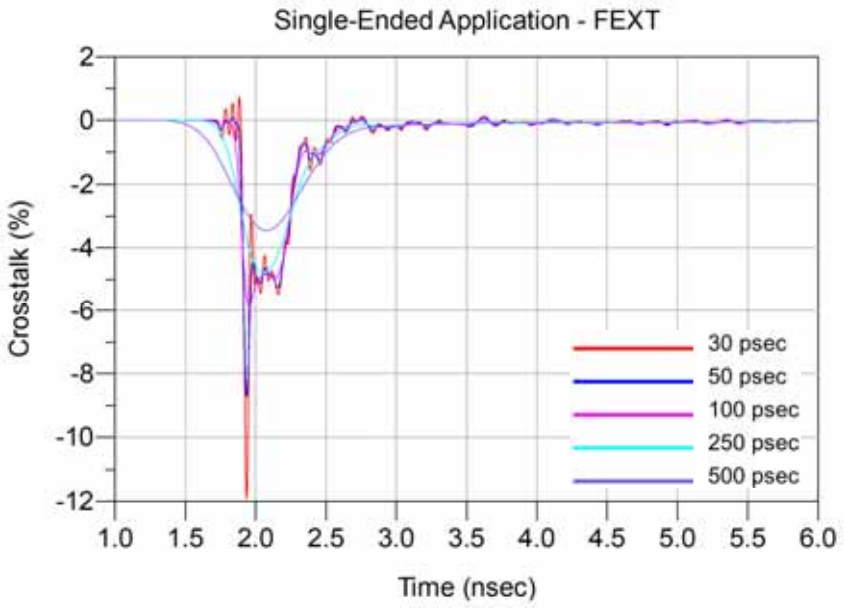


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Single-Ended 2:1 S/G Pattern Application – NEXT, SEAM8_K23_SEAM8_K24

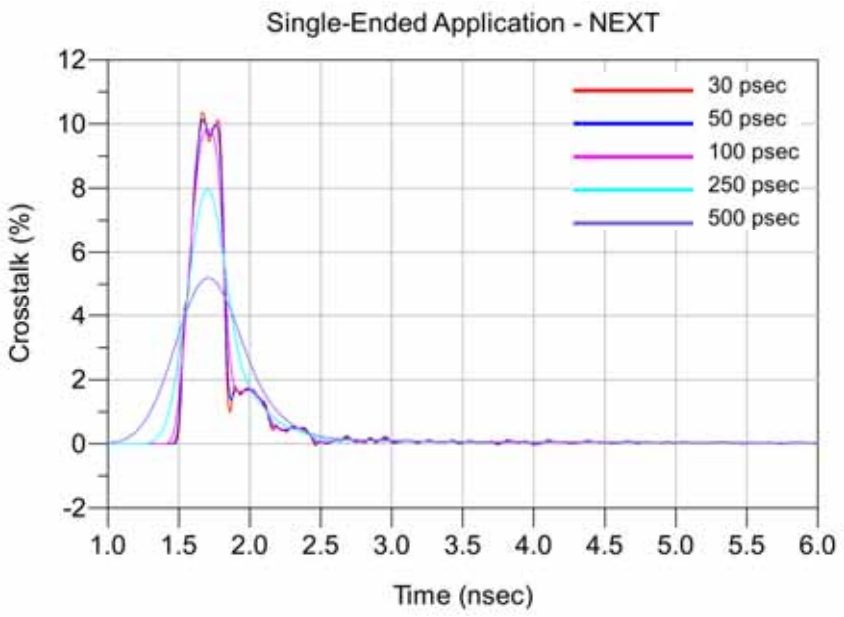


Single-Ended 2:1 S/G Pattern Application – FEXT, SEAM8_K23_SEAF8-RA_K24

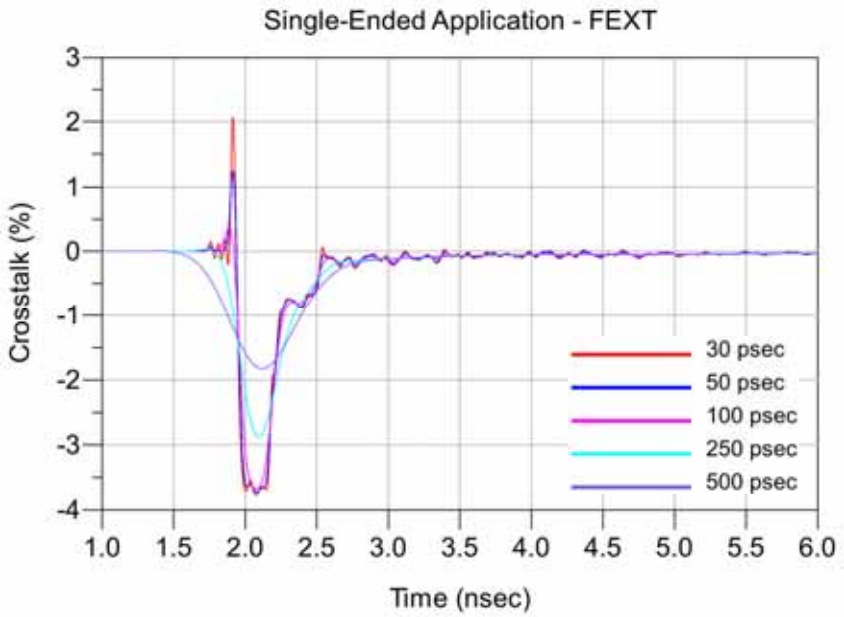


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Single-Ended 2:1 S/G Pattern Application – NEXT, SEAM8_K23_SEAM8_J23

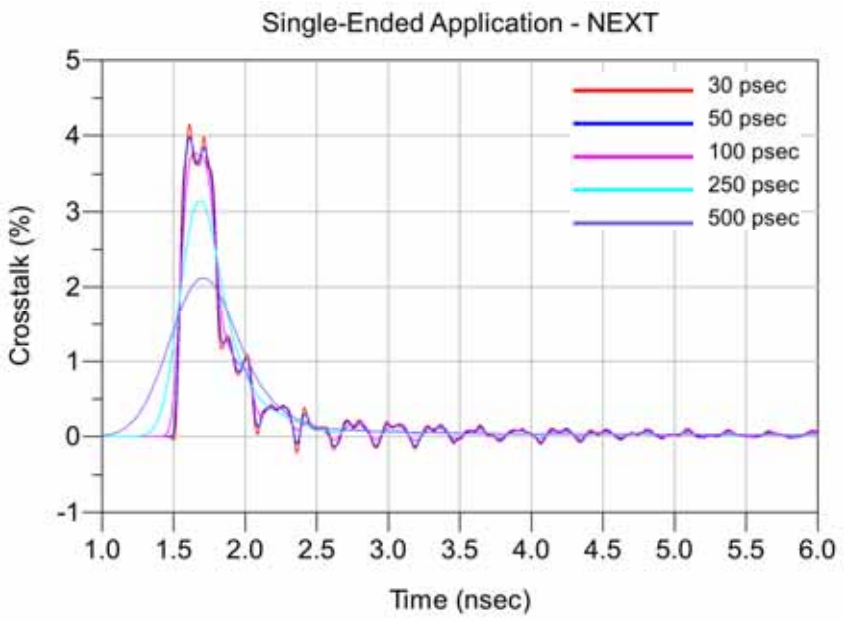


Single-Ended 2:1 S/G Pattern Application – FEXT, SEAM8_K23_SEAF8-RA_J23

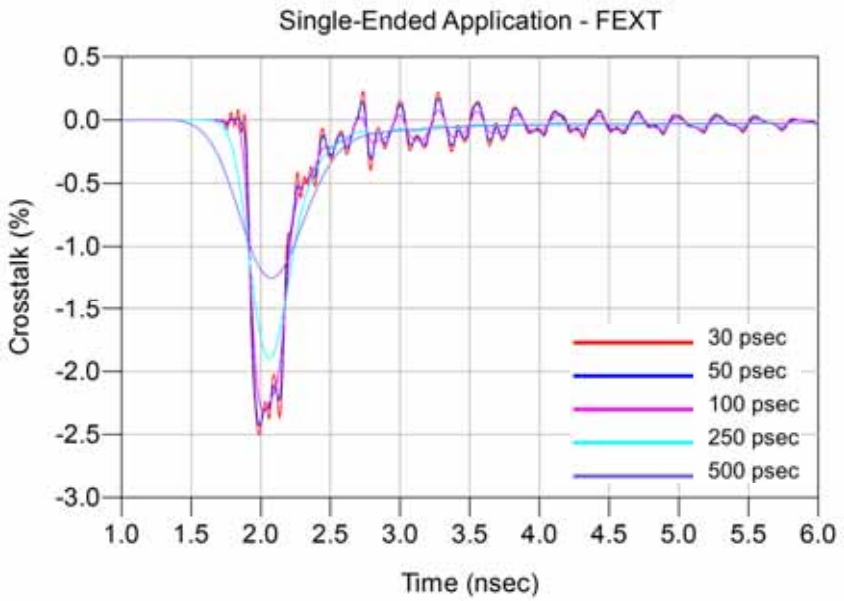


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Single-Ended 2:1 S/G Pattern Application – NEXT, SEAM8_H22_SEAM8_J23

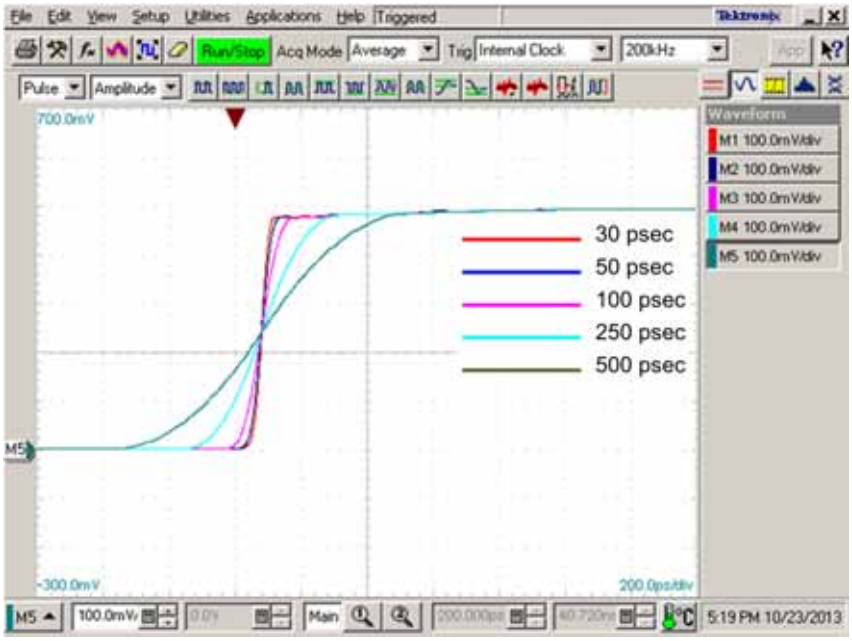


Single-Ended 2:1 S/G Pattern Application – FEXT, SEAM8_H22_SEAF8-RA_J23



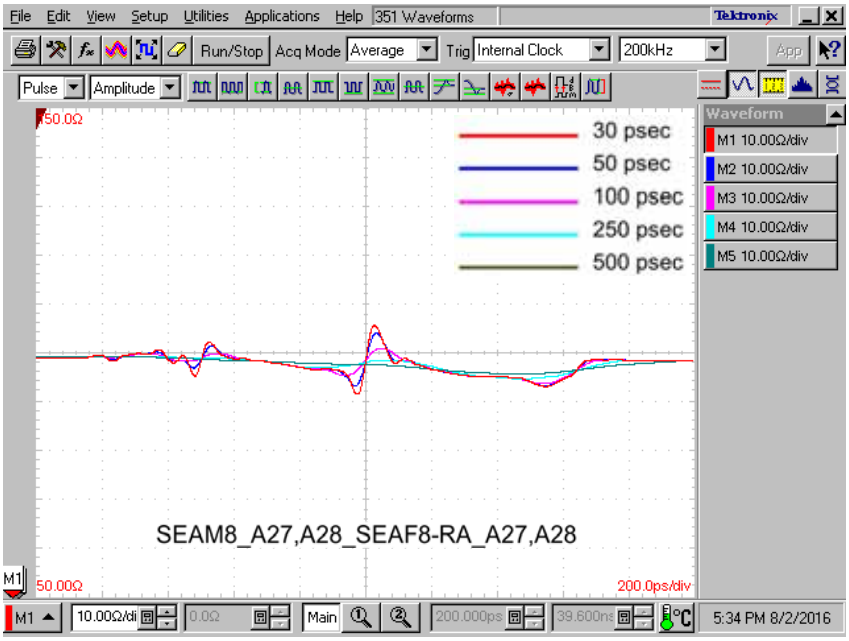
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

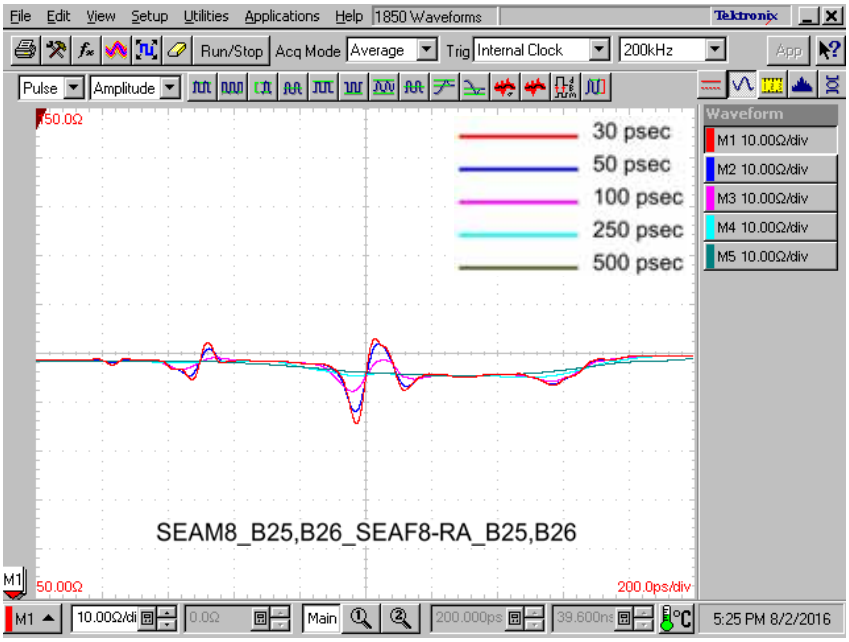
Differential Application – Input Pulse



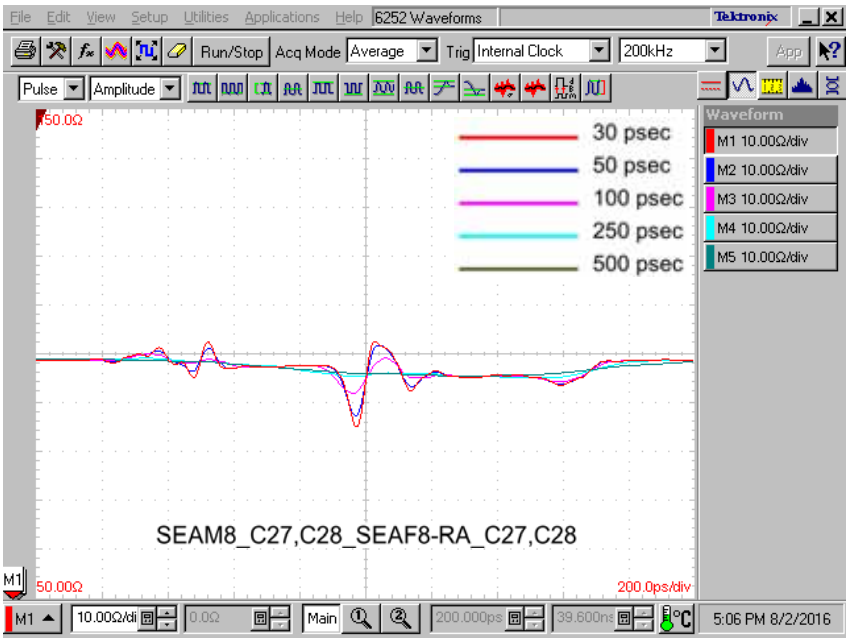
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

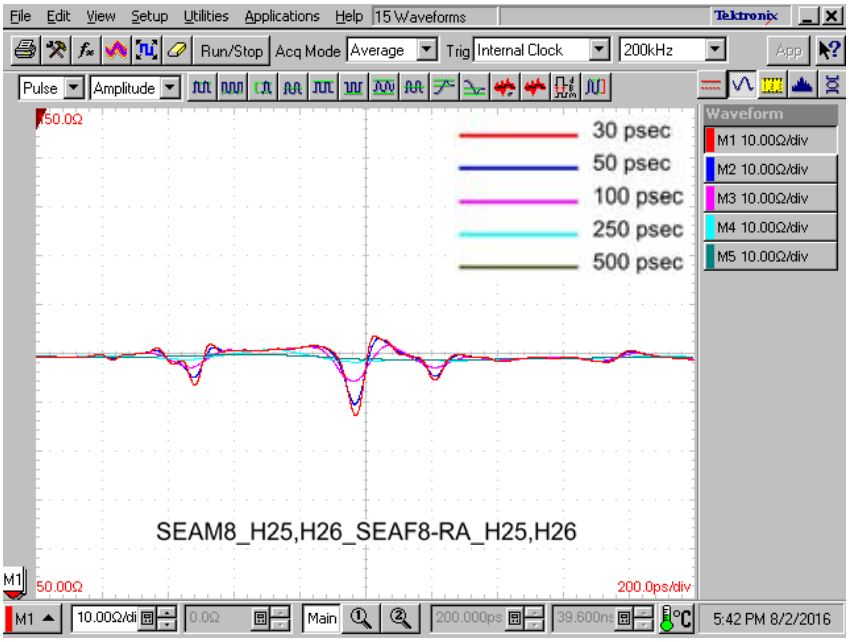
Differential Optimal Horizontal Application – Impedance



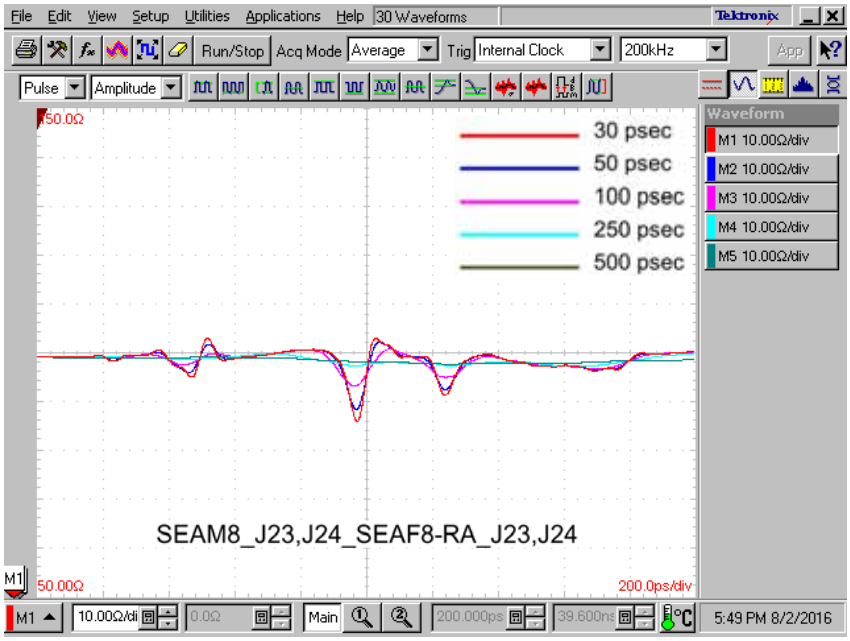


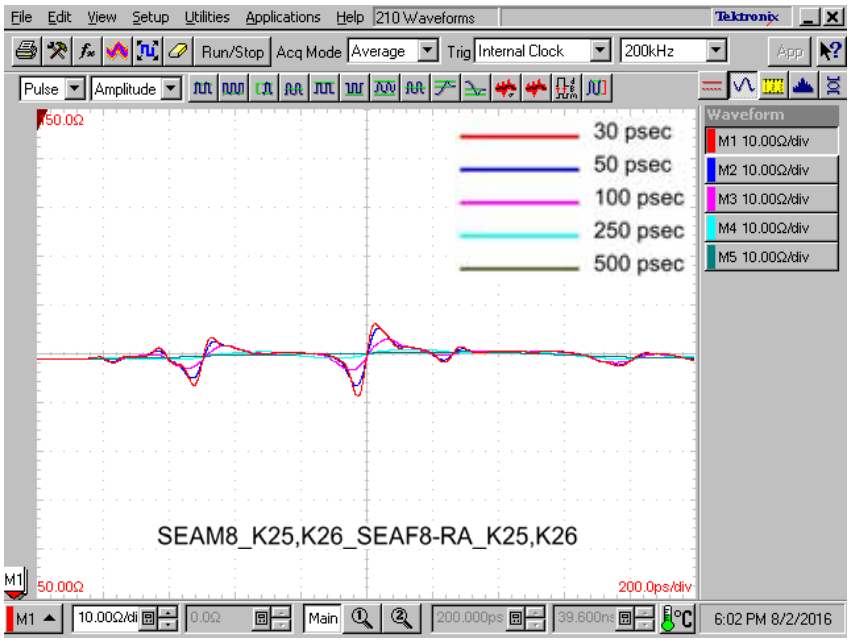
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female





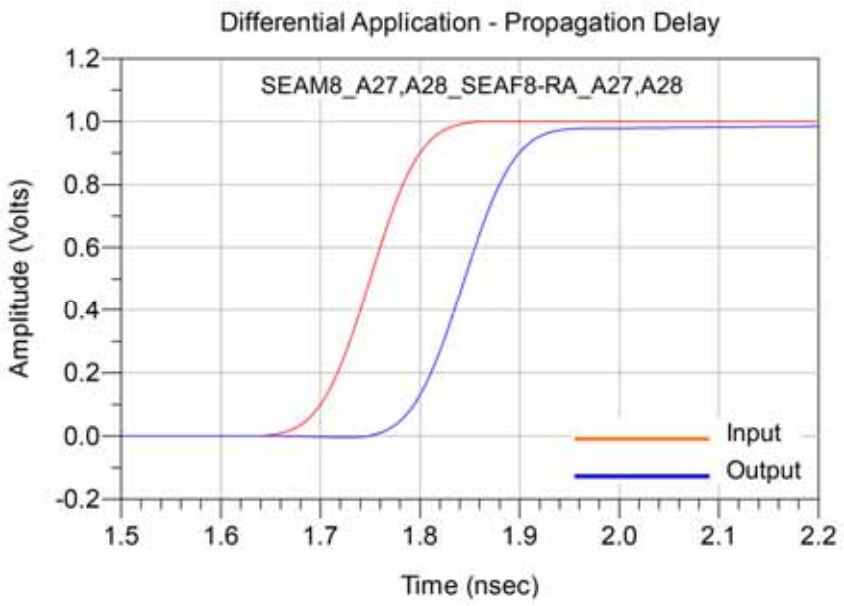
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

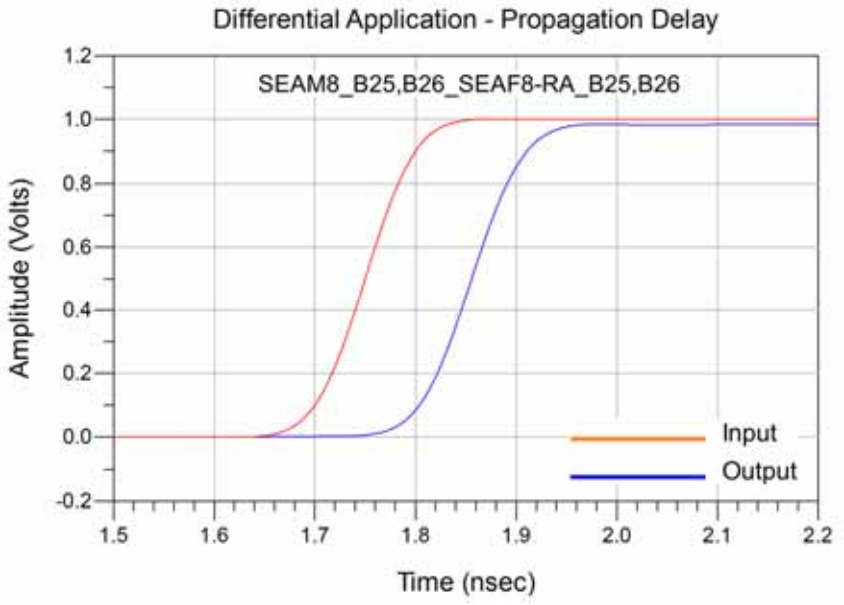




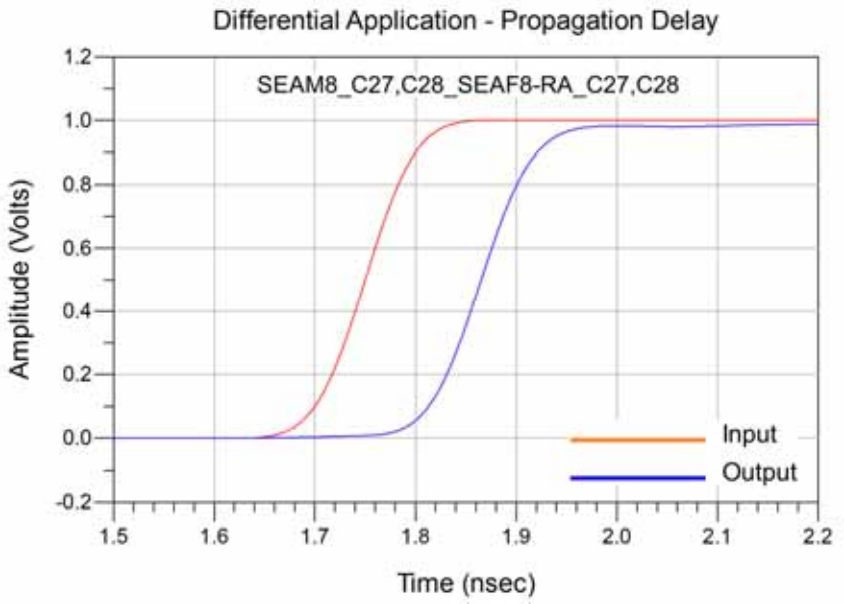
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

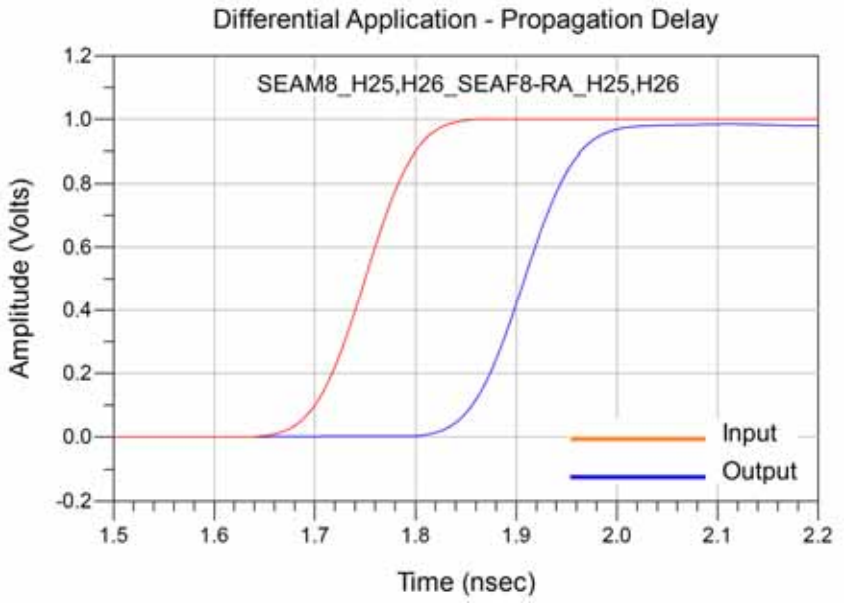
Differential Optimal Horizontal Application – Propagation Delay



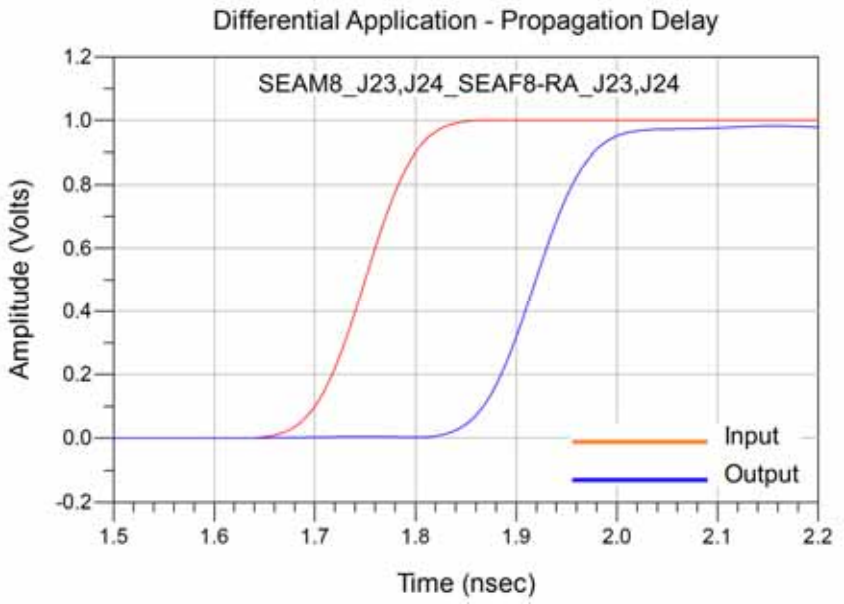


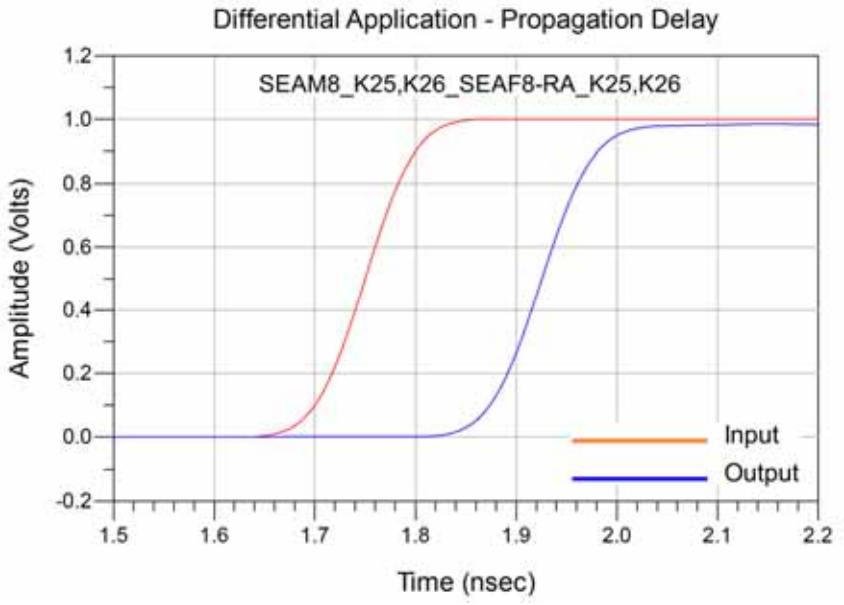
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female





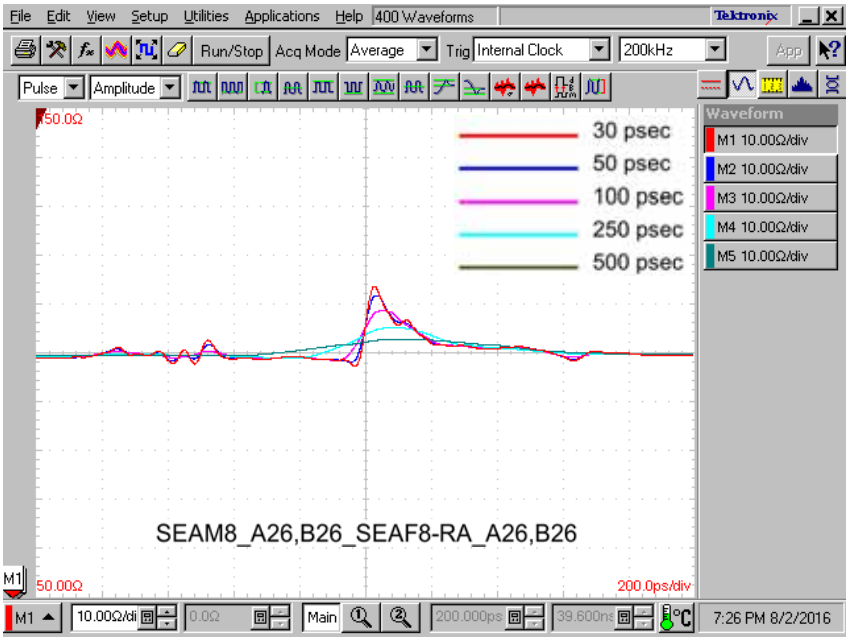
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

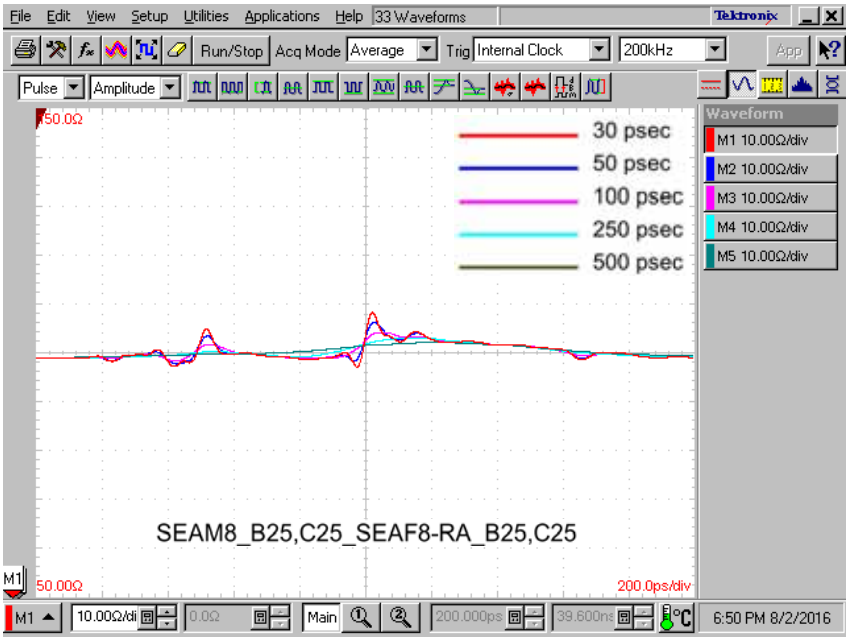




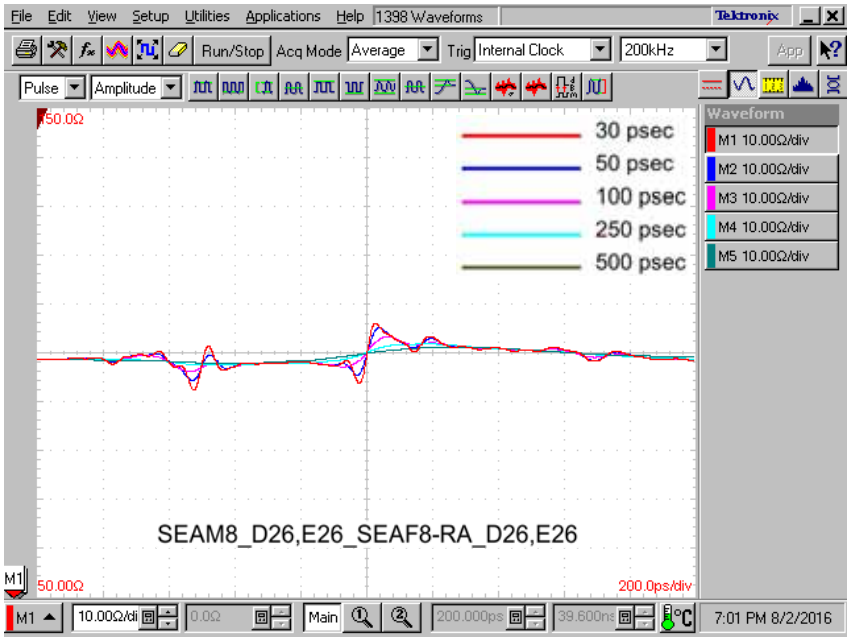
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

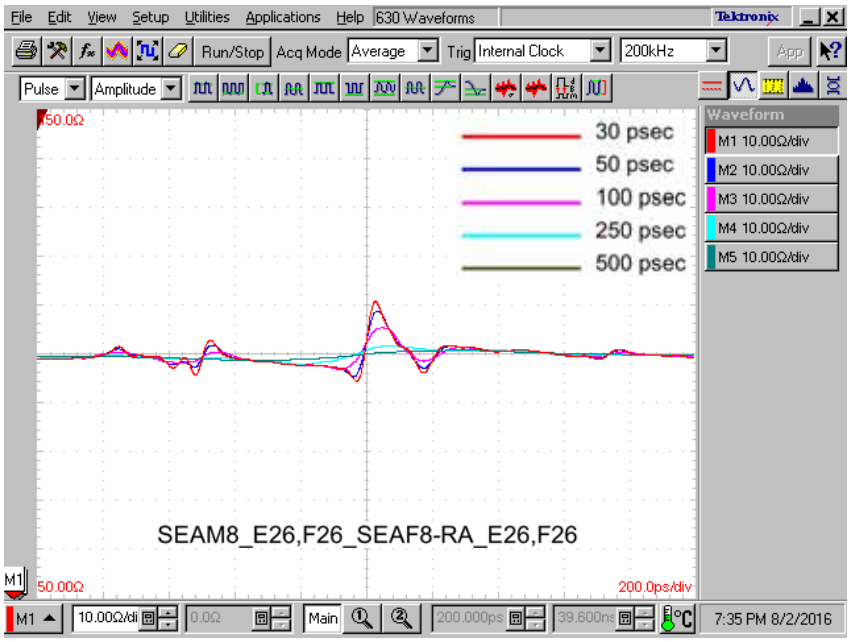
Differential Optimal Vertical Application – Impedance



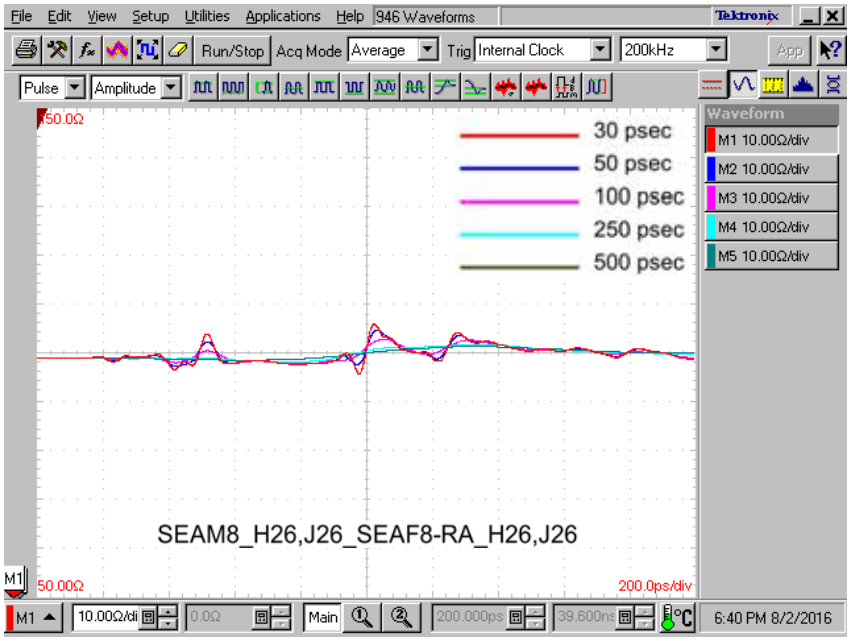


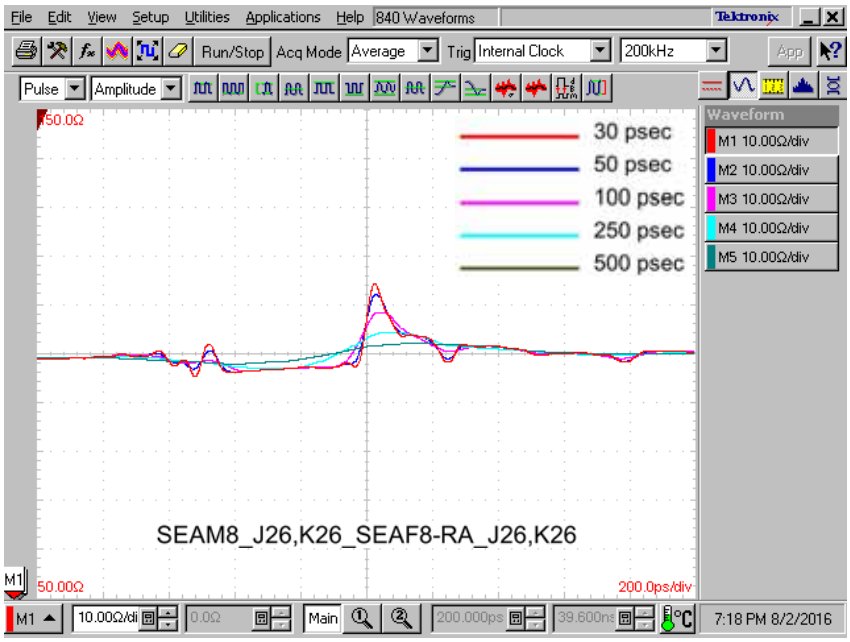
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female





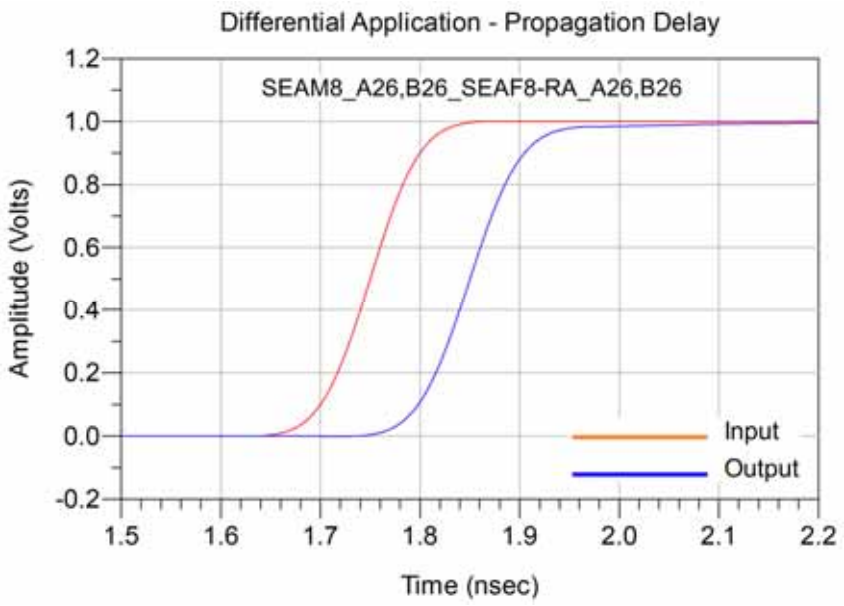
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

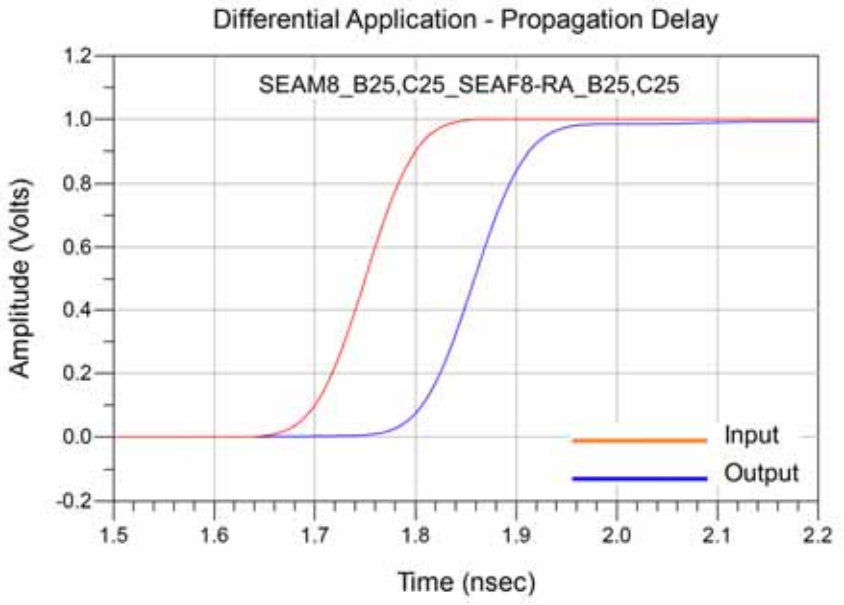




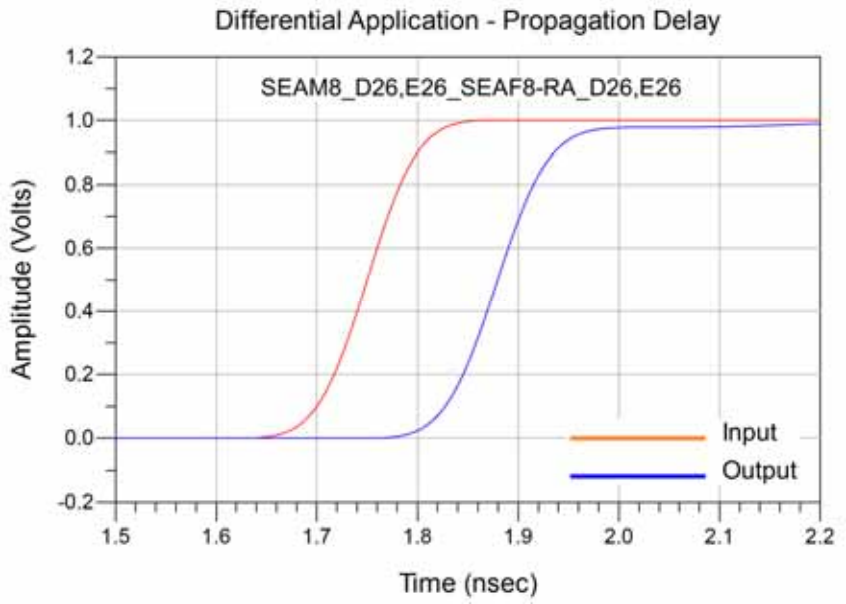
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

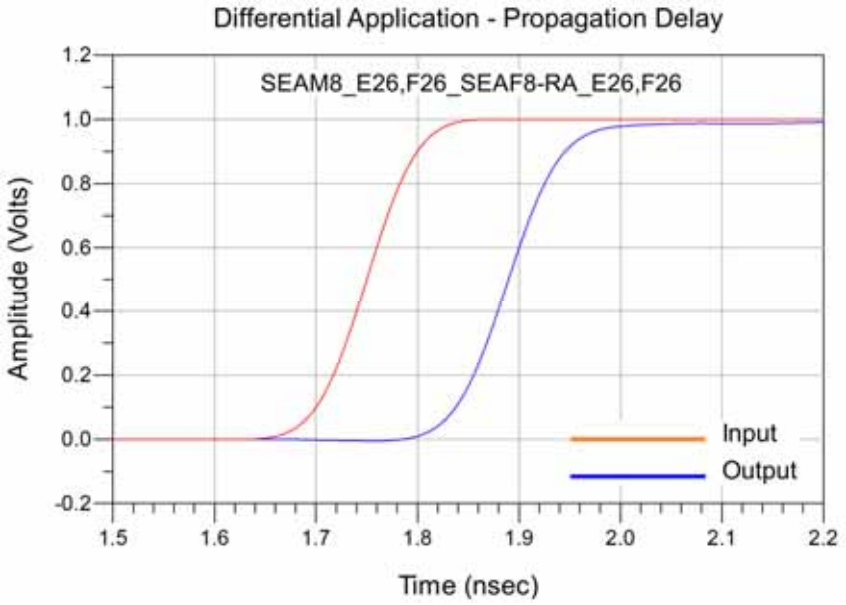
Differential Optimal Vertical Application – Propagation Delay



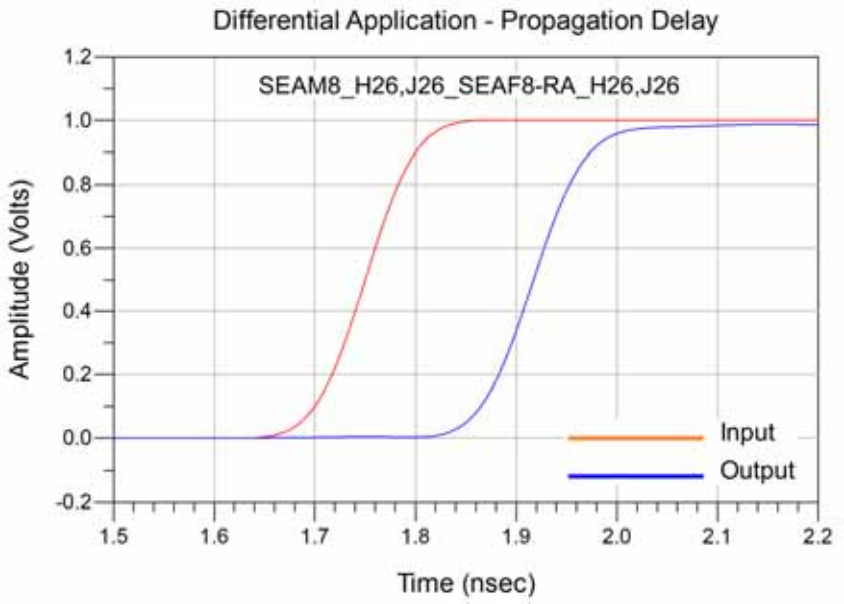


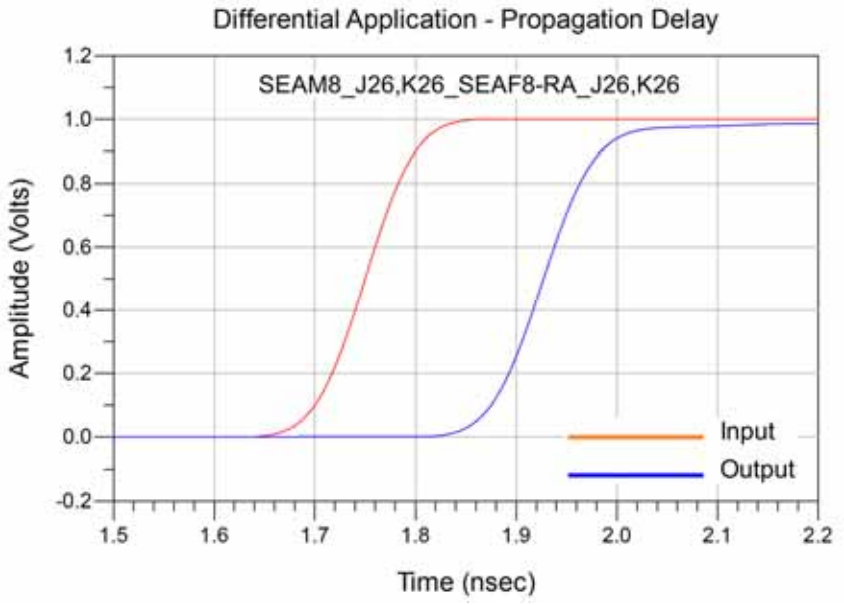
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female





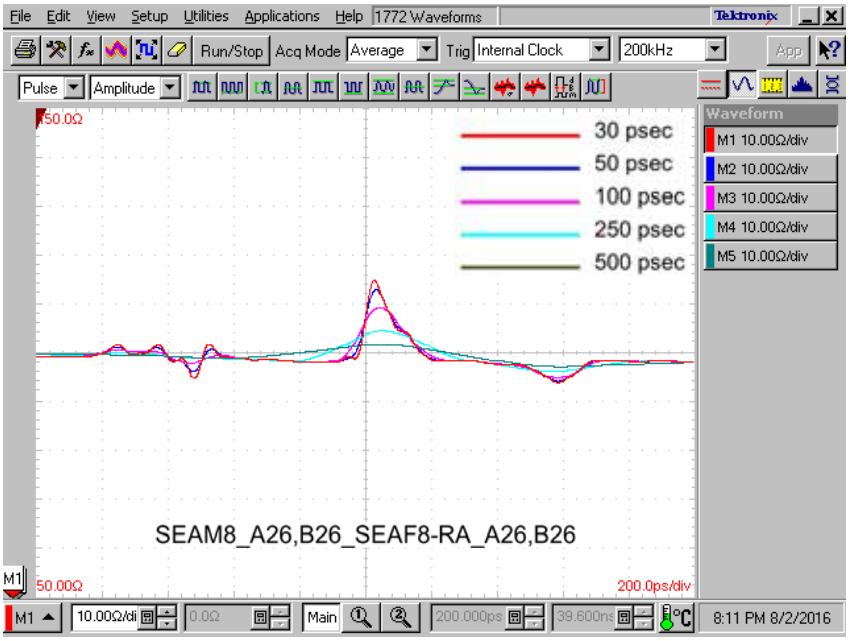
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

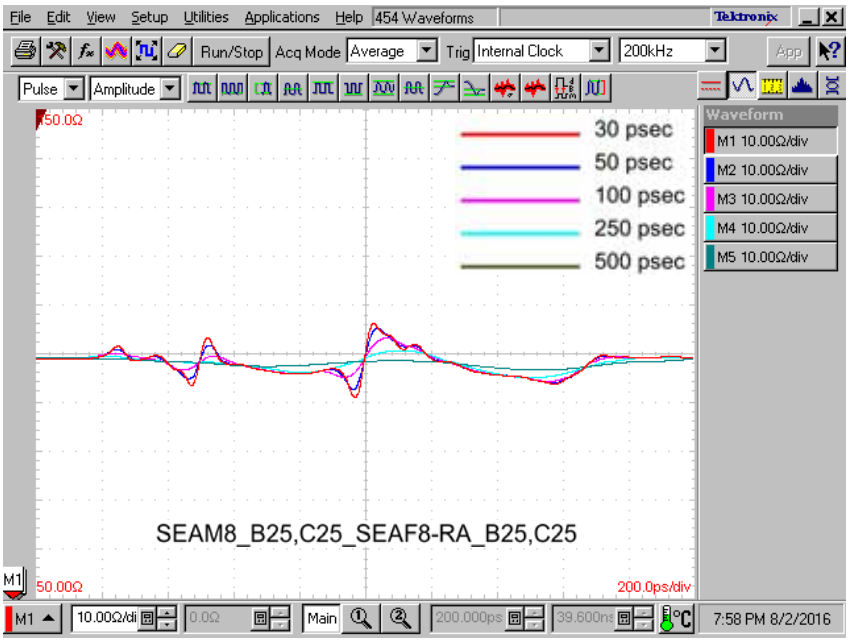




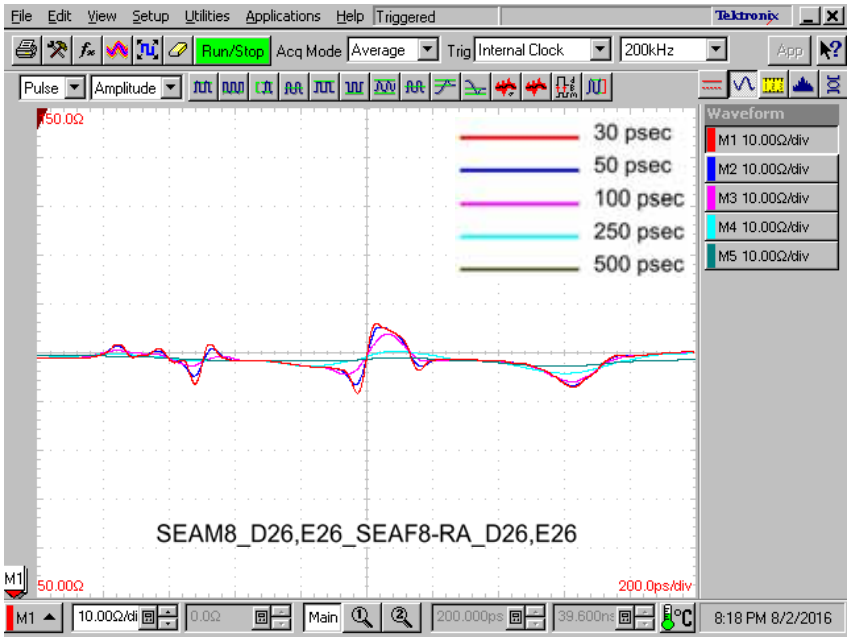
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

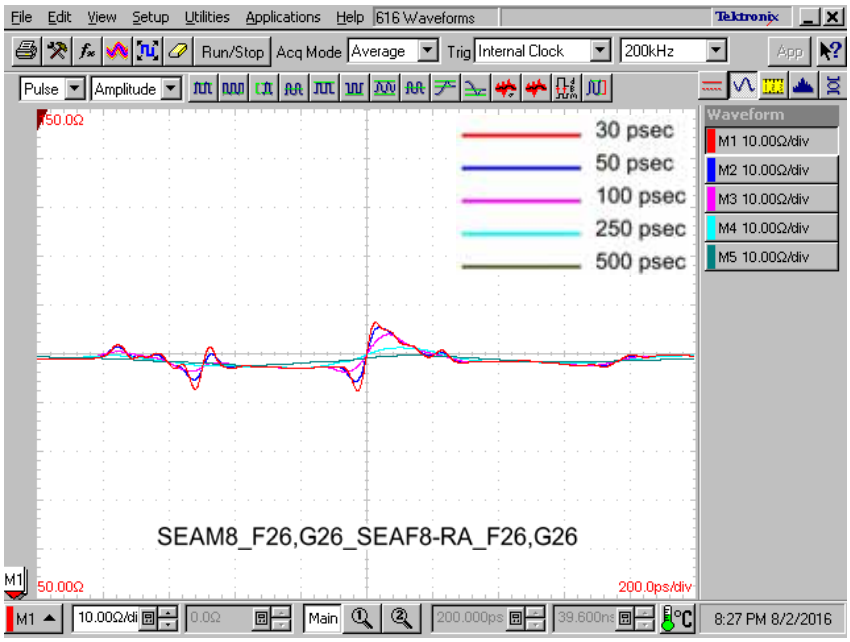
Differential High Density Vertical Application – Impedance



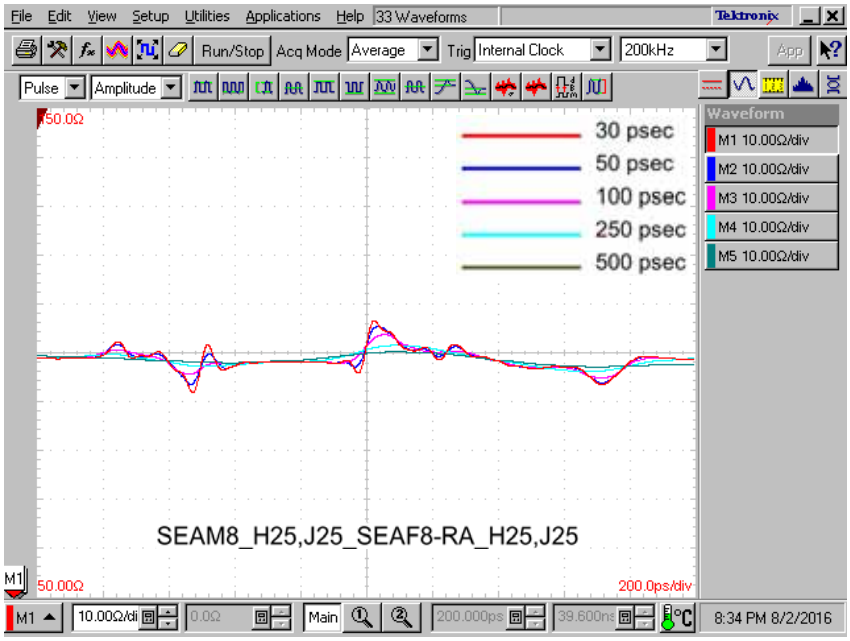


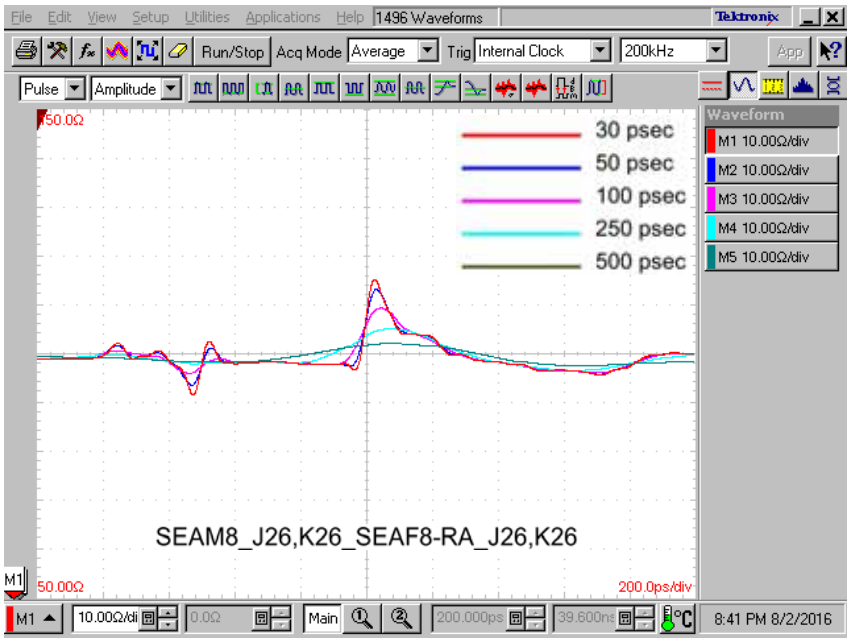
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female





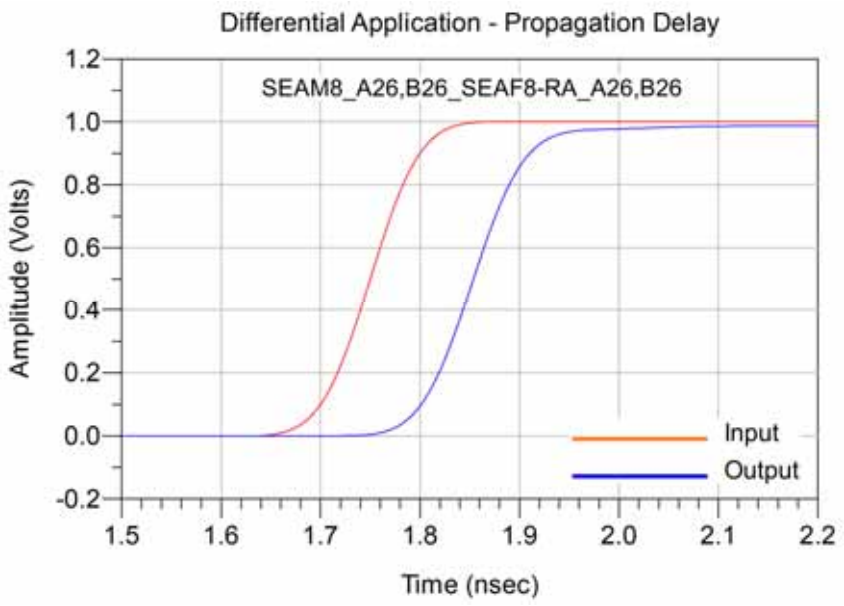
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

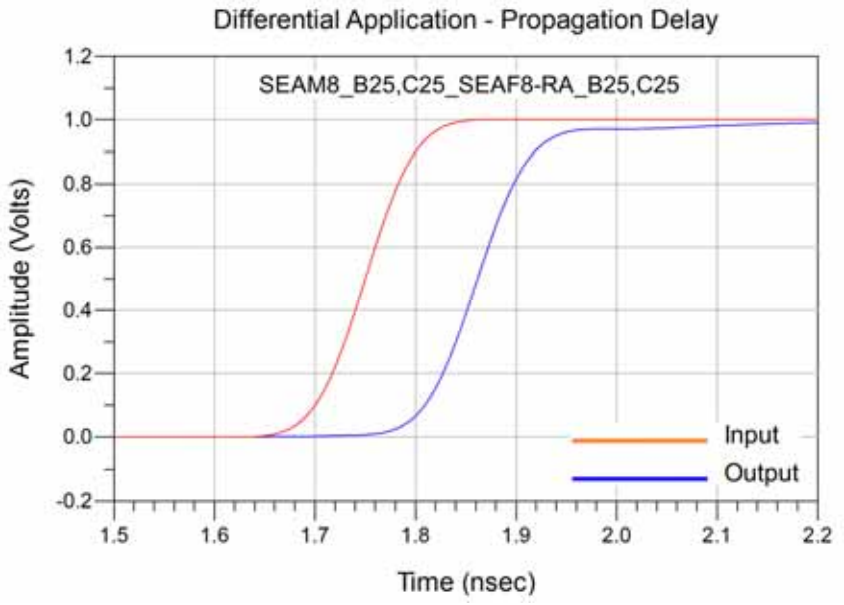




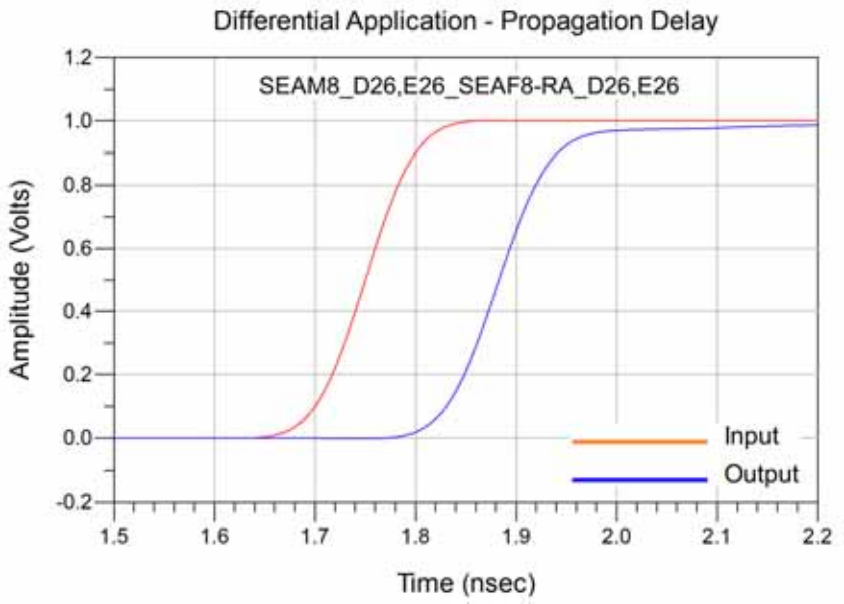
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

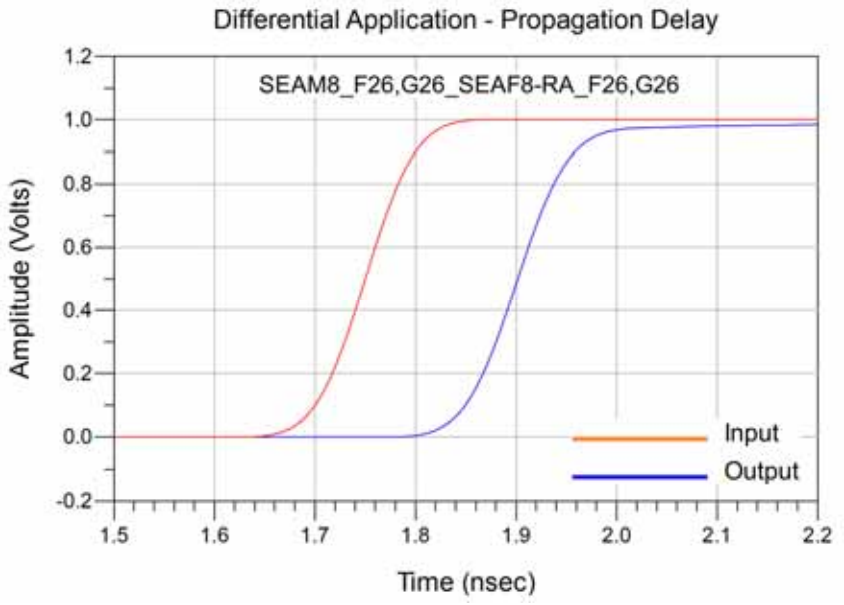
Differential High Density Vertical Application – Propagation Delay



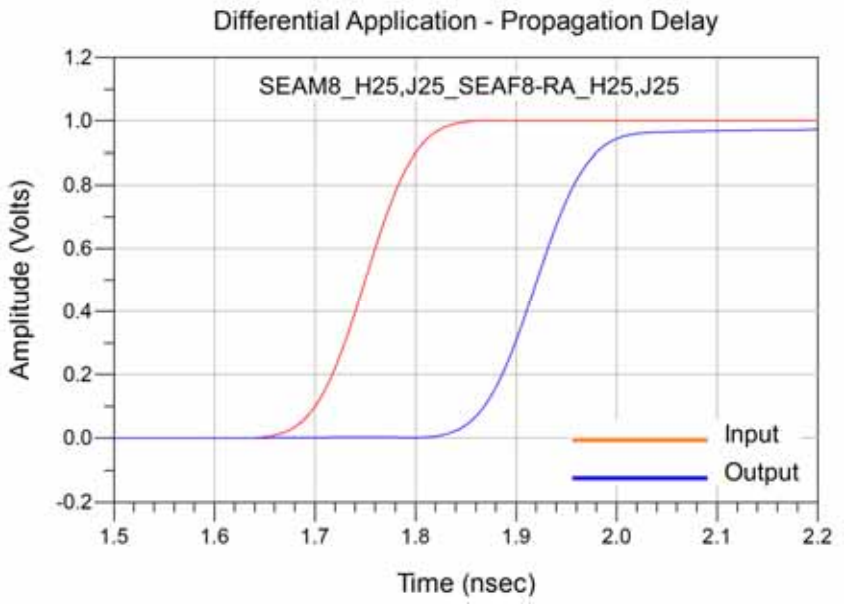


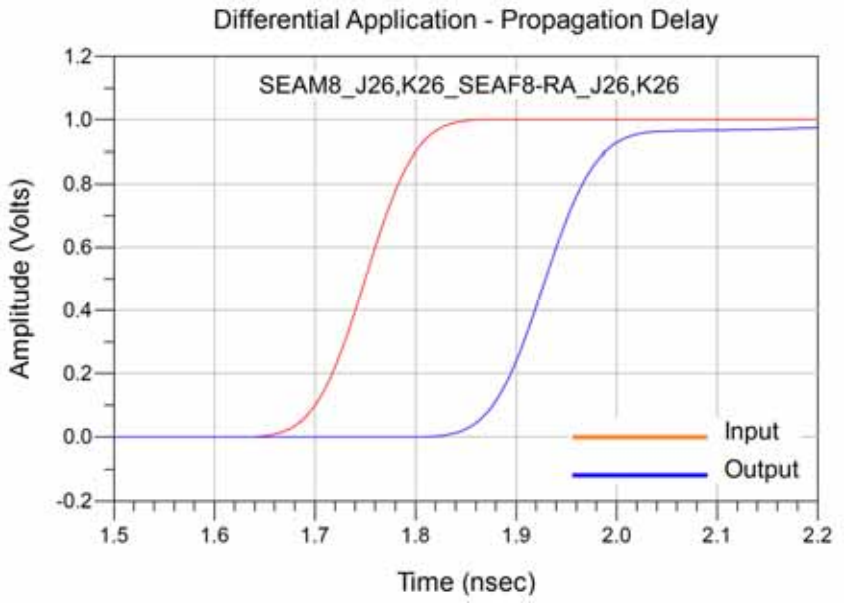
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female





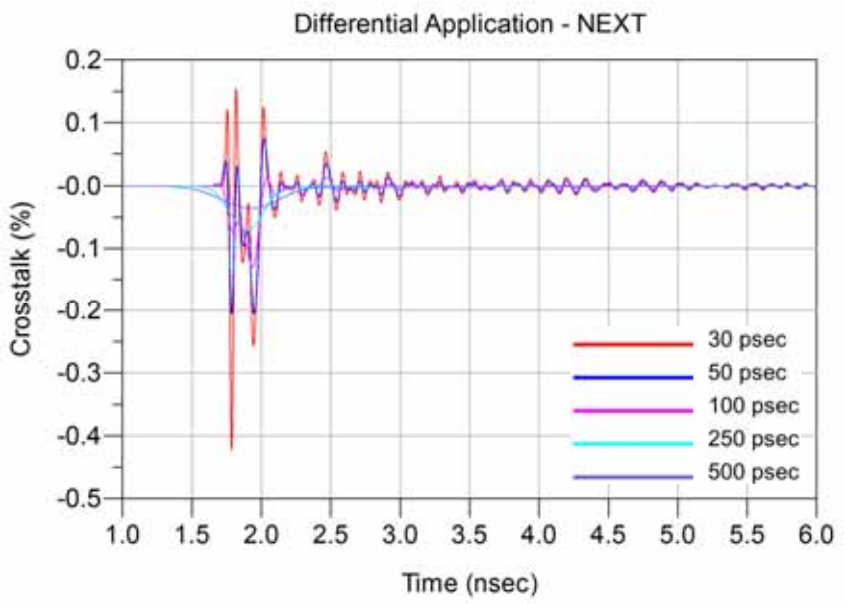
Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female



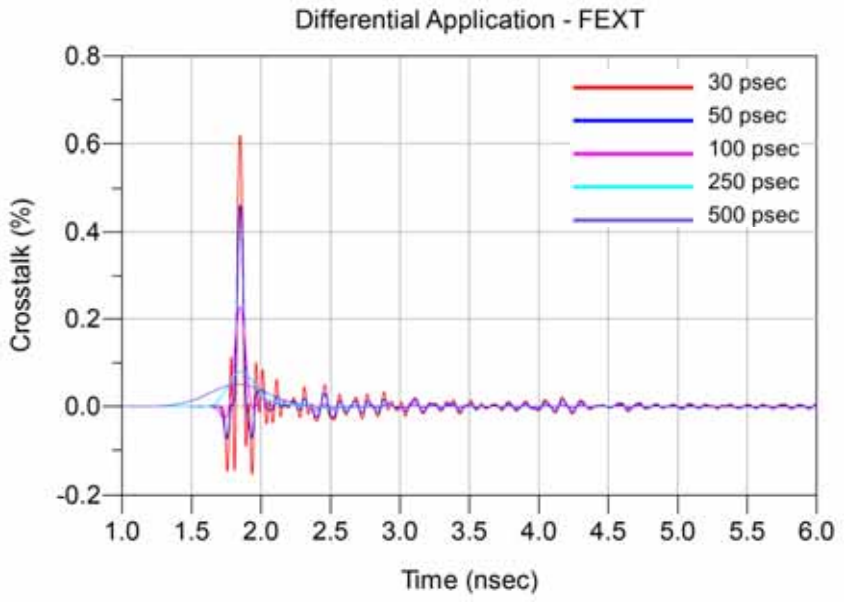


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Diff Optimal Horizontal Application – NEXT, SEAM8_A27,A28_SEAM8_A23,A24

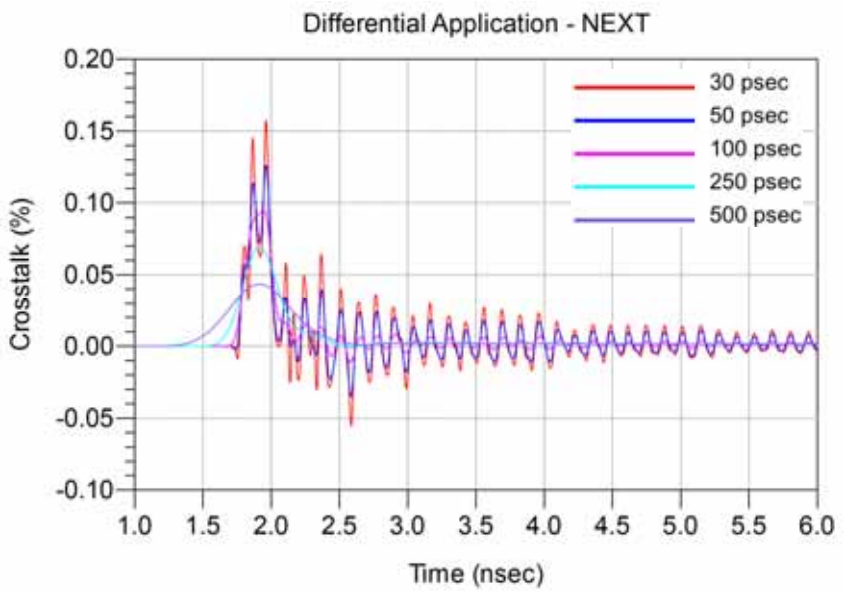


Diff Optimal Horizontal Application – FEXT, SEAM8_A27,A28_SEAF8-RA_A23,A24

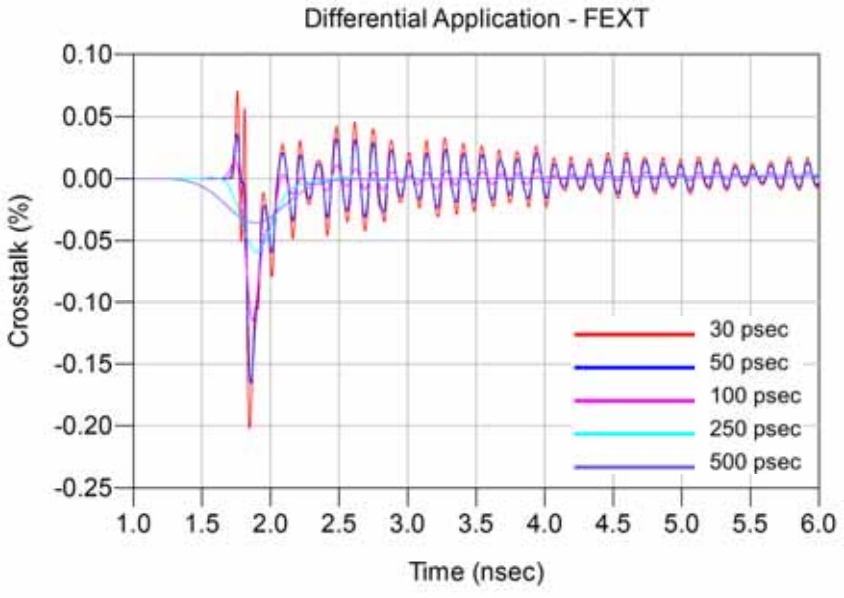


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Diff Optimal Horizontal Application – NEXT, SEAM8_A27,A28_SEAM8_C27,C28

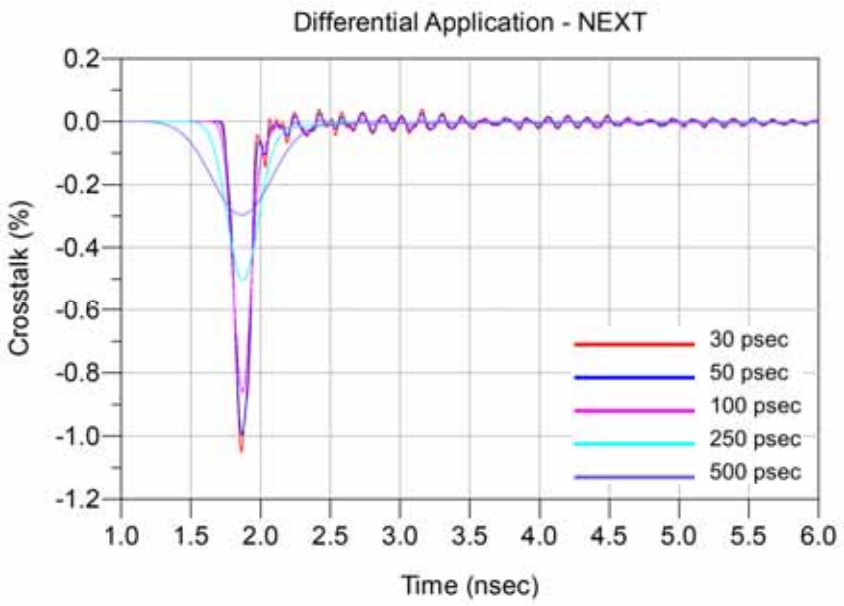


Diff Optimal Horizontal Application – FEXT, SEAM8_A27,A28_SEAF8-RA_C27,C28

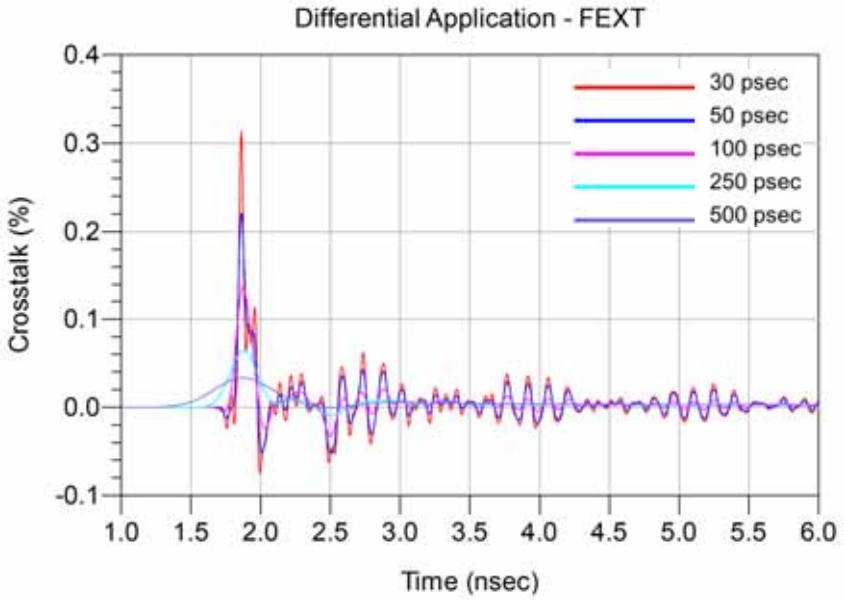


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Diff Optimal Horizontal Application – NEXT, SEAM8_B25,B26_SEAM8_C27,C28

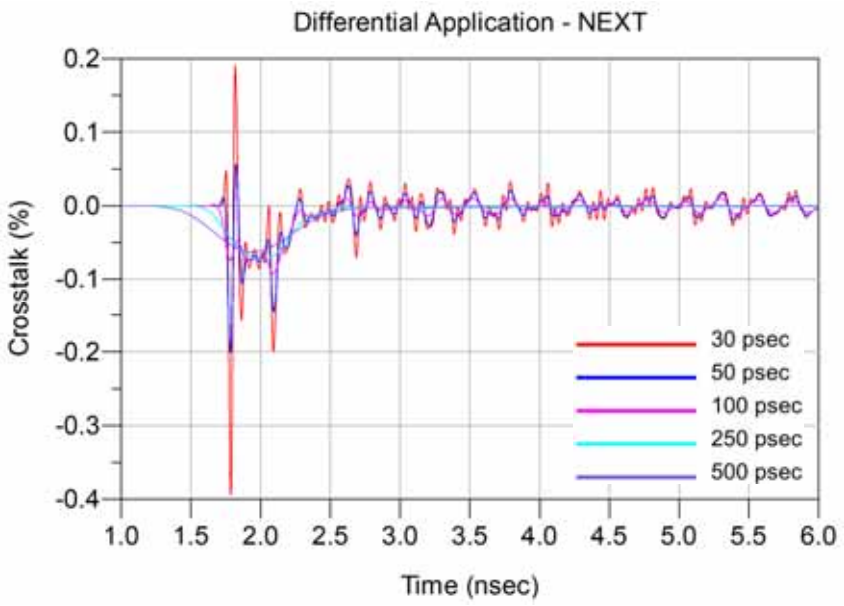


Diff Optimal Horizontal Application – FEXT, SEAM8_B25,B26_SEAF8-RA_C27,C28

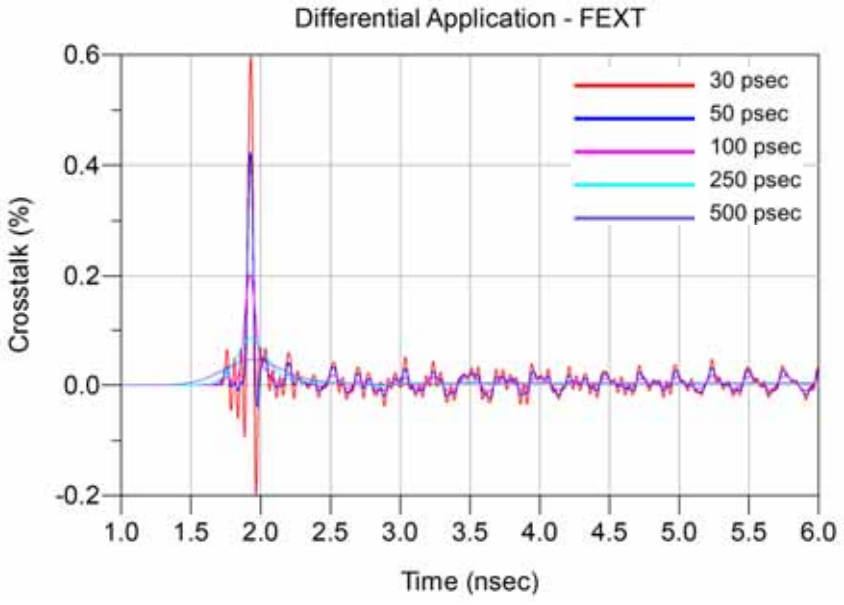


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Diff Optimal Horizontal Application – NEXT, SEAM8_K25,K26_SEAM8_K21,K22

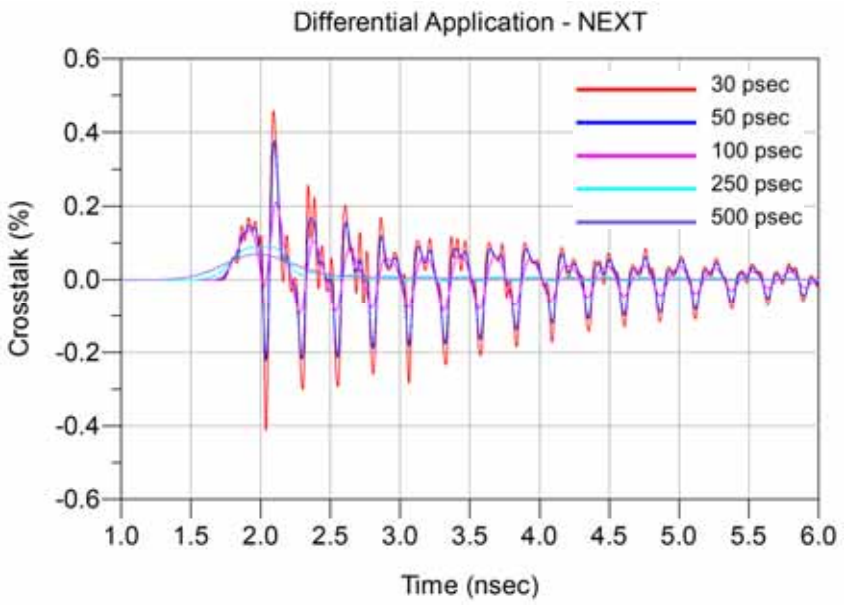


Diff Optimal Horizontal Application – FEXT, SEAM8_K25,K26_SEAF8-RA_K21,K22

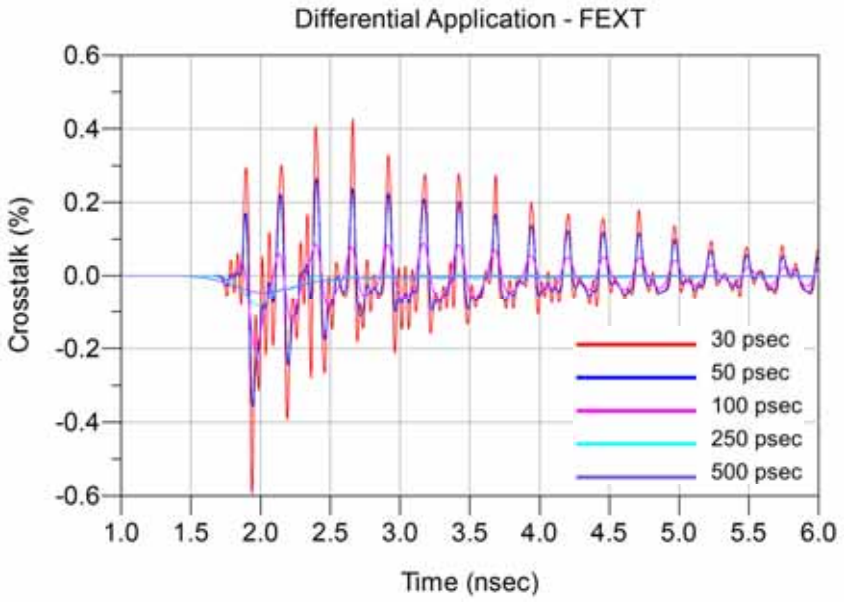


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Diff Optimal Horizontal Application – NEXT, SEAM8_K25,K26_SEAM8_H25,H26

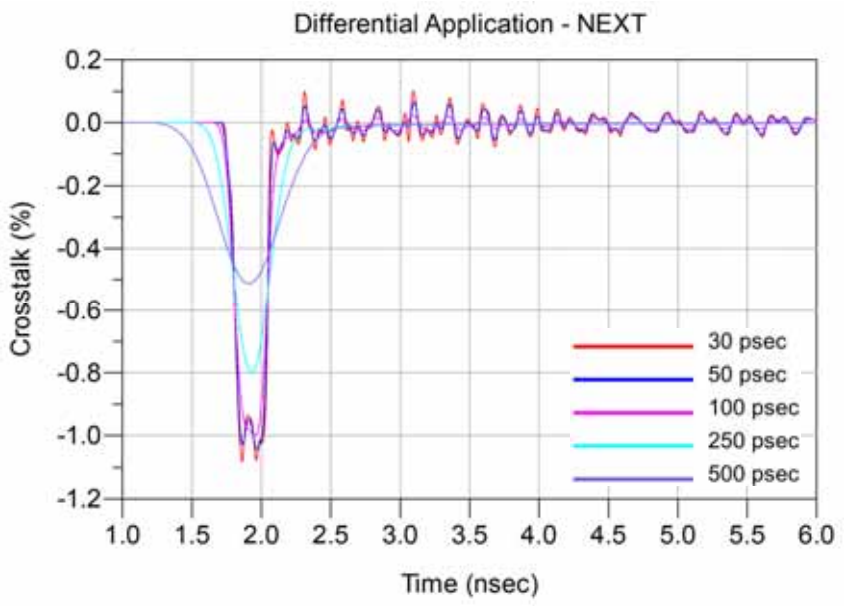


Diff Optimal Horizontal Application – FEXT, SEAM8_K25,K26_SEAF8-RA_H25,H26

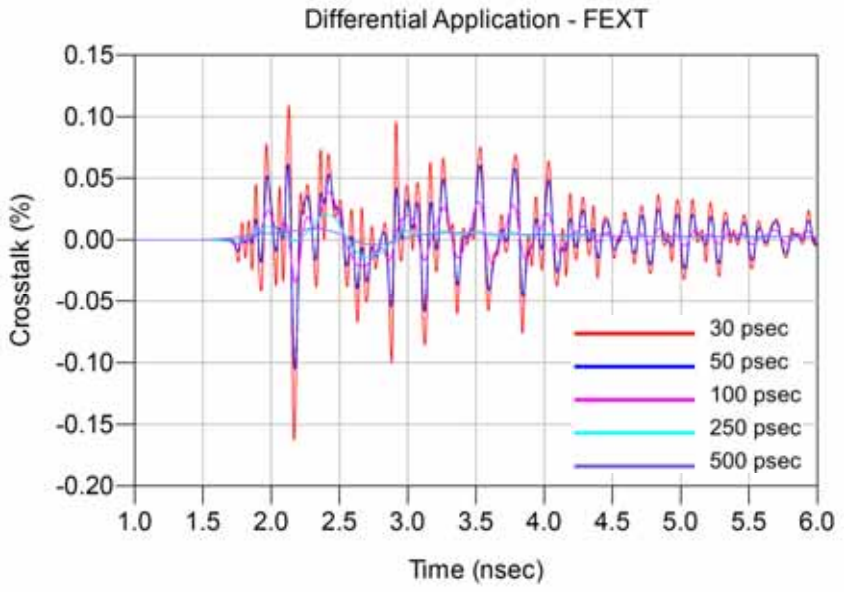


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Diff Optimal Horizontal Application – NEXT, SEAM8_ H25,H26_SEAM8_ J23,J24

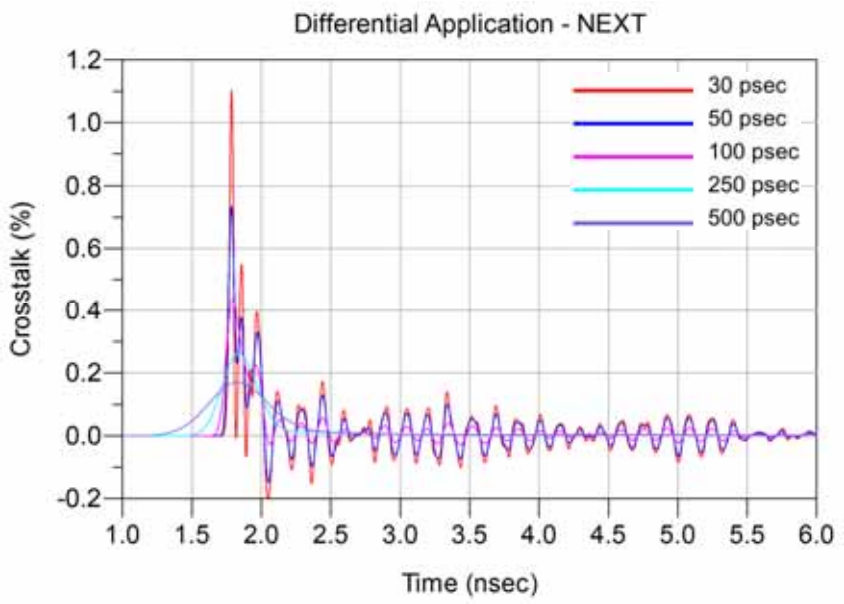


Diff Optimal Horizontal Application – FEXT, SEAM8_ H25,H26_SEAF8-RA_ J23,J24

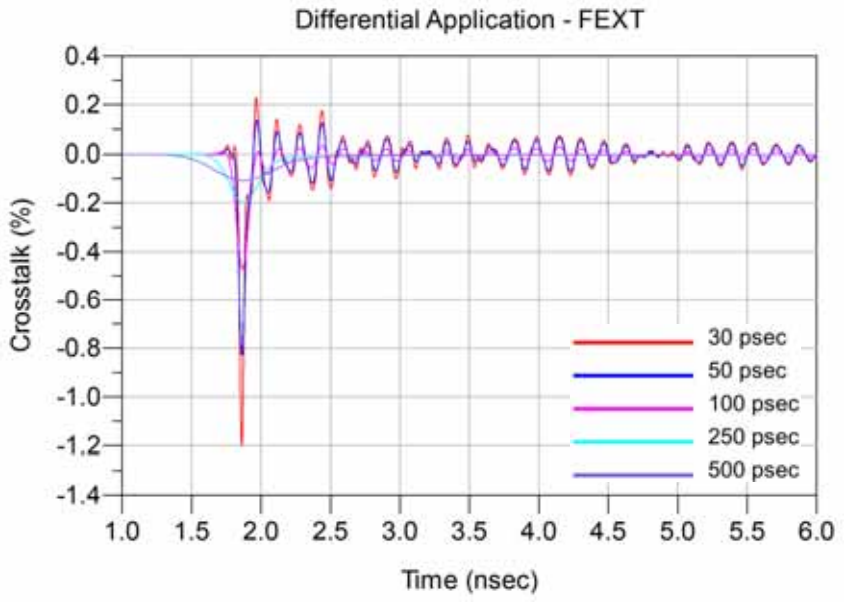


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Diff Optimal Vertical Application – NEXT, SEAM8_B25,C25_SEAM8_B27,C27

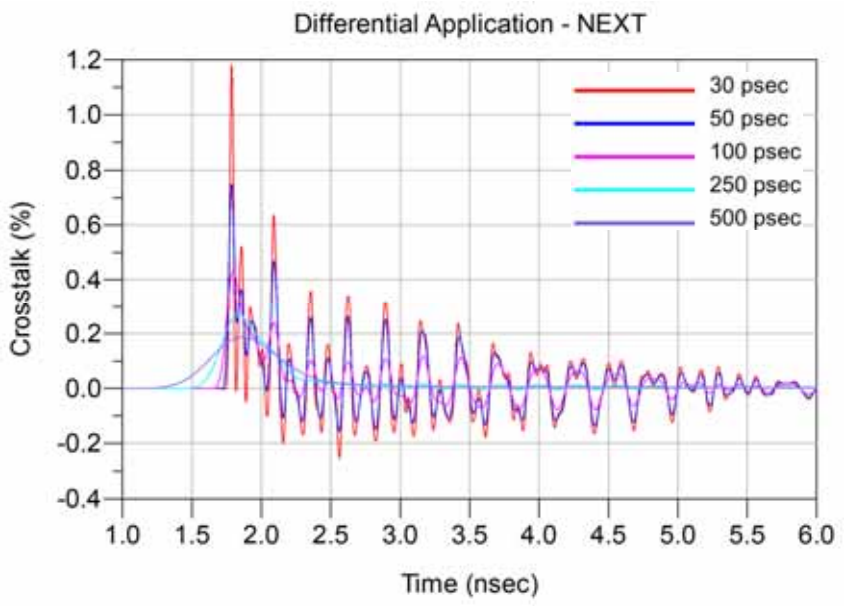


Diff Optimal Vertical Application – FEXT, SEAM8_B25,C25_SEAF8-RA_B27,C27

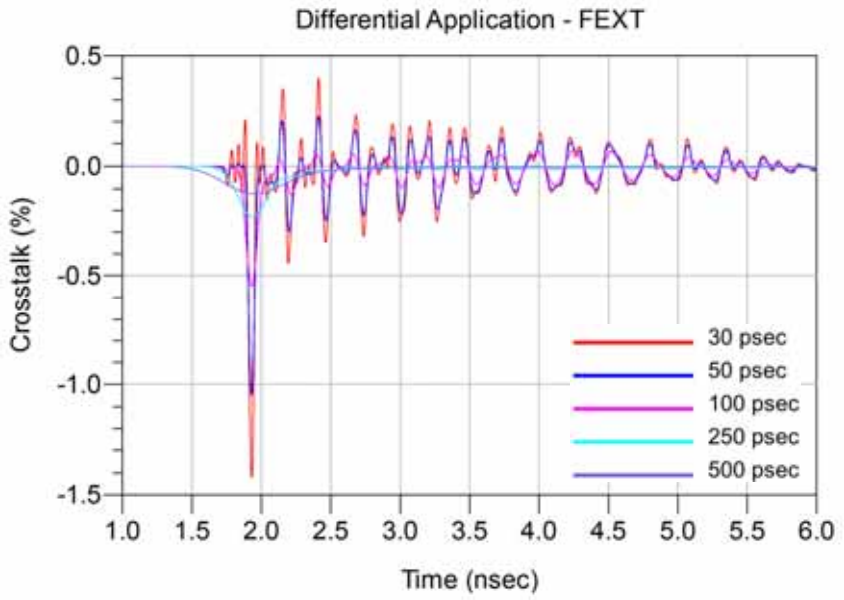


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Diff Optimal Vertical Application – NEXT, SEAM8_H26,J26_SEAM8_H28,J28

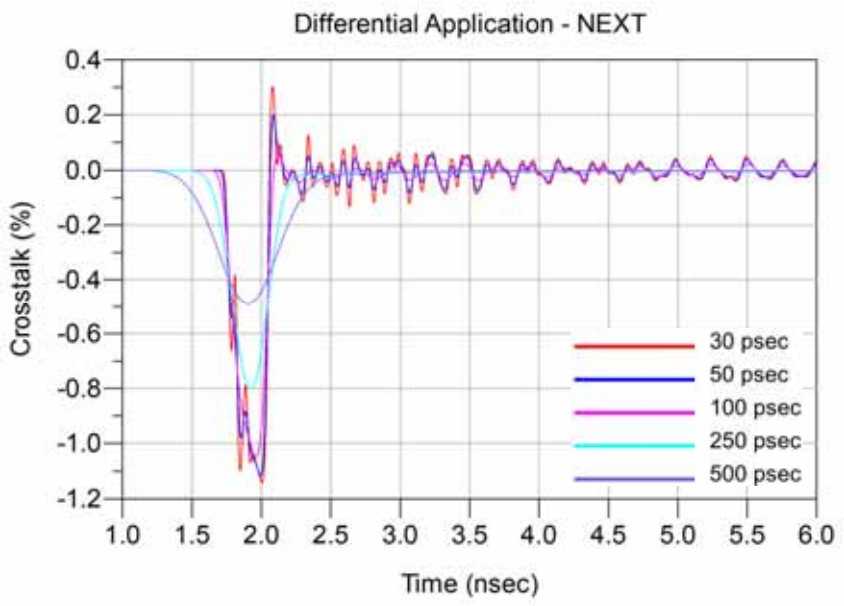


Diff Optimal Vertical Application – FEXT, SEAM8_H26,J26_SEAF8-RA8_H28,J28

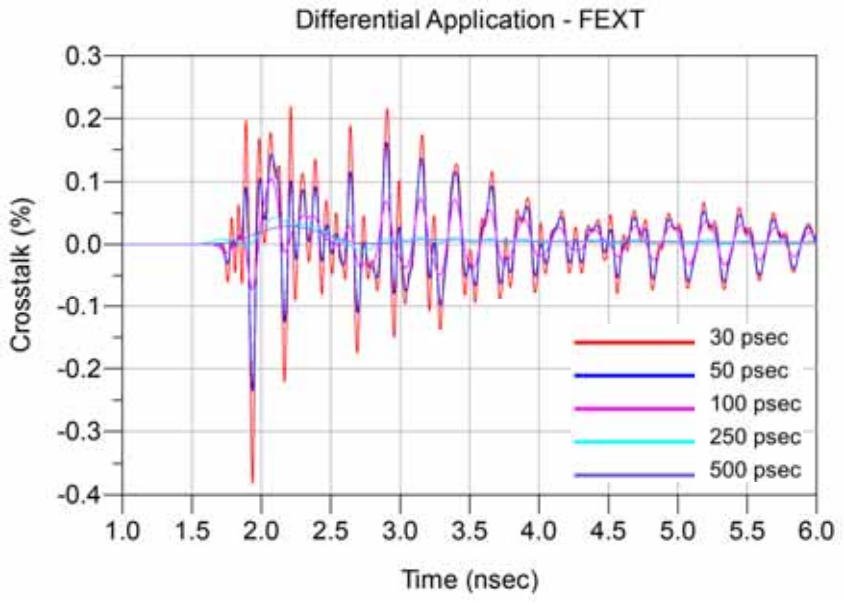


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Diff Optimal Vertical Application – NEXT, SEAM8_F25,G25_SEAM8_H24,J24

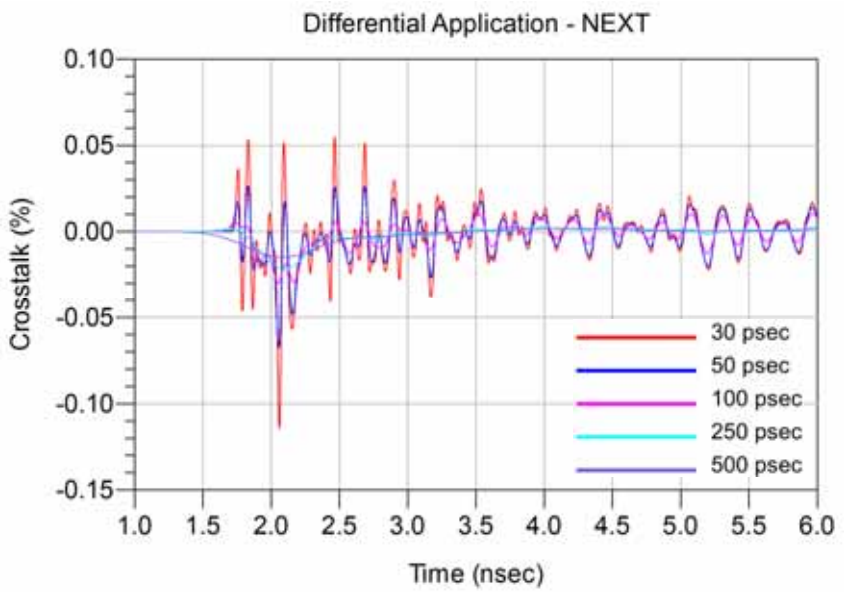


Diff Optimal Vertical Application – FEXT, SEAM8_F25,G25_SEAF8-RA_H24,J24

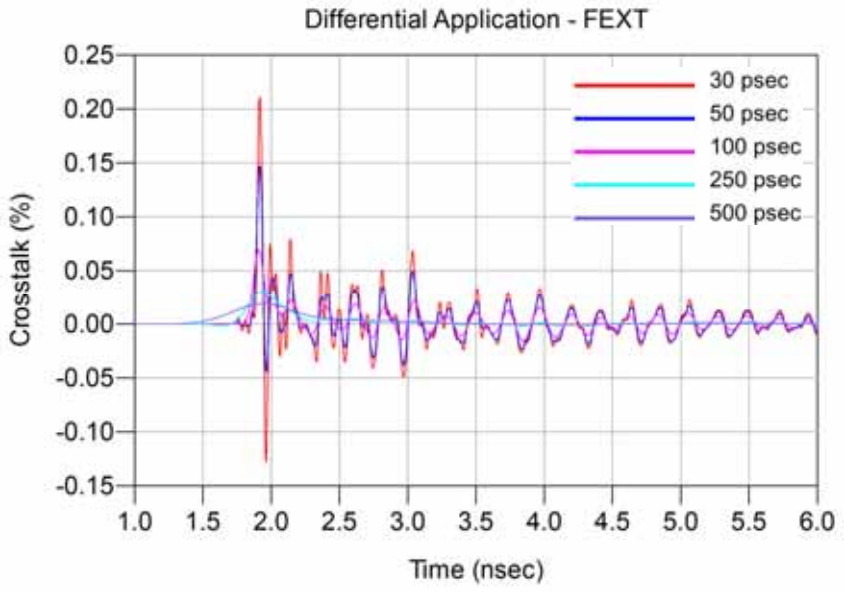


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Diff Optimal Vertical Application – NEXT, SEAM8_J26,K26_SEAM8_E26,F26

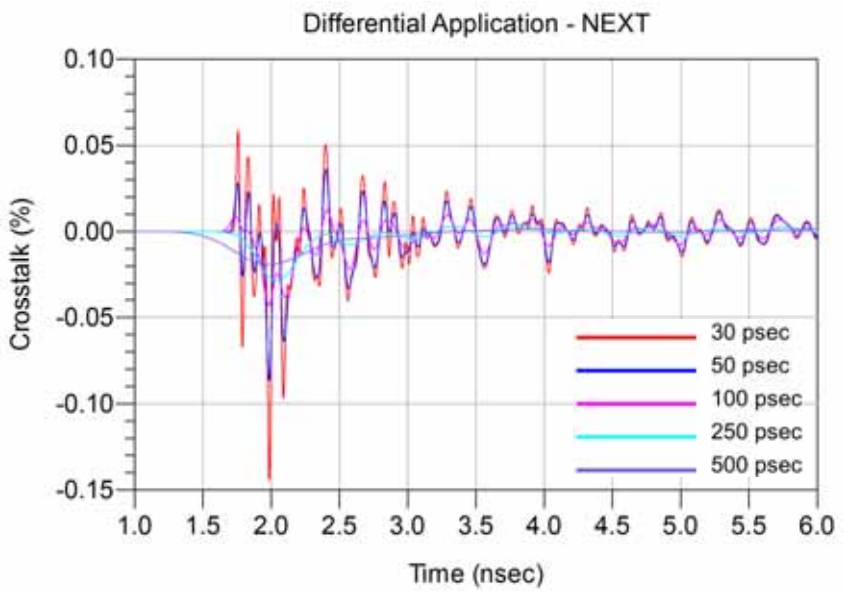


Diff Optimal Vertical Application – FEXT, SEAM8_J26,K26_SEAF8-RA_E26,F26

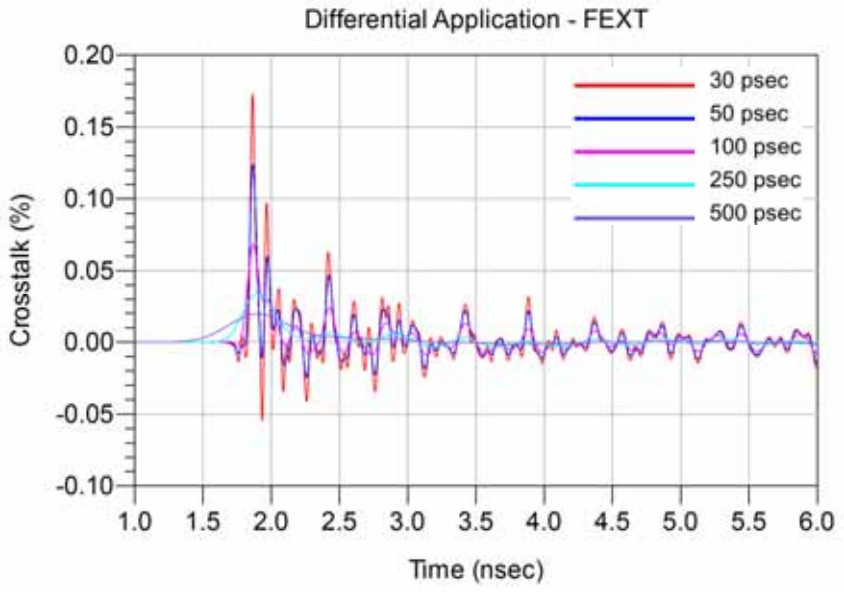


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Diff Optimal Vertical Application – NEXT, SEAM8_A26,B26_SEAM8_E26,F26

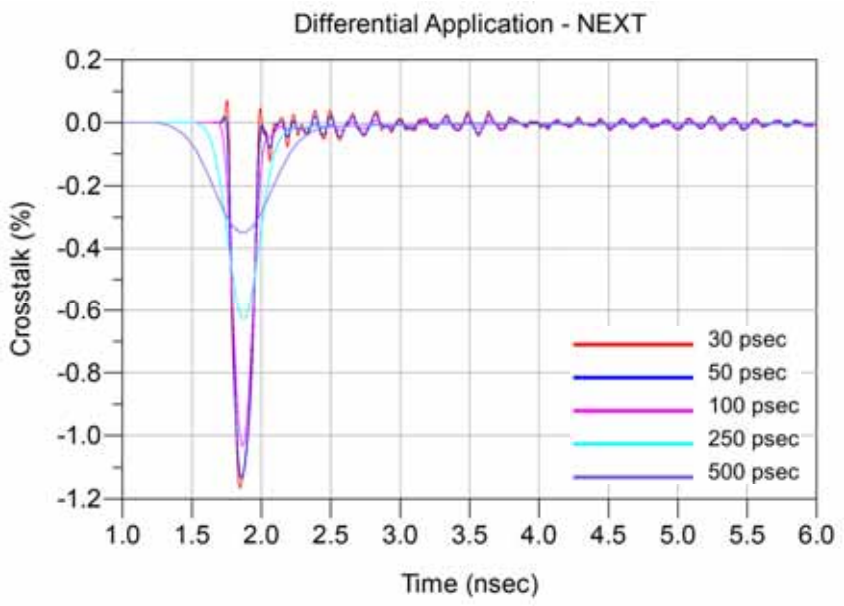


Diff Optimal Vertical Application – FEXT, SEAM8_A26,B26_SEAF8-RA_E26,F26

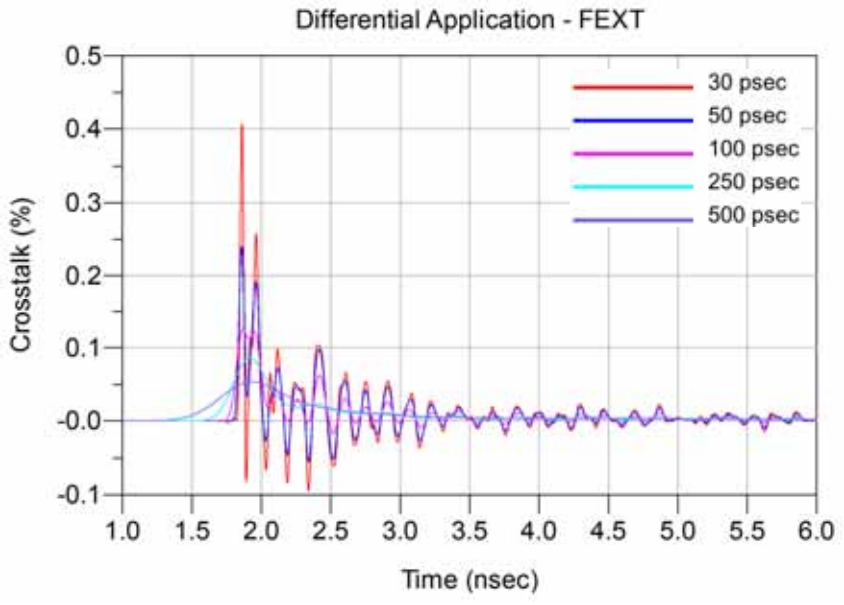


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Diff Optimal Vertical Application – NEXT, SEAM8_A26,B26_SEAM8_C25,D25

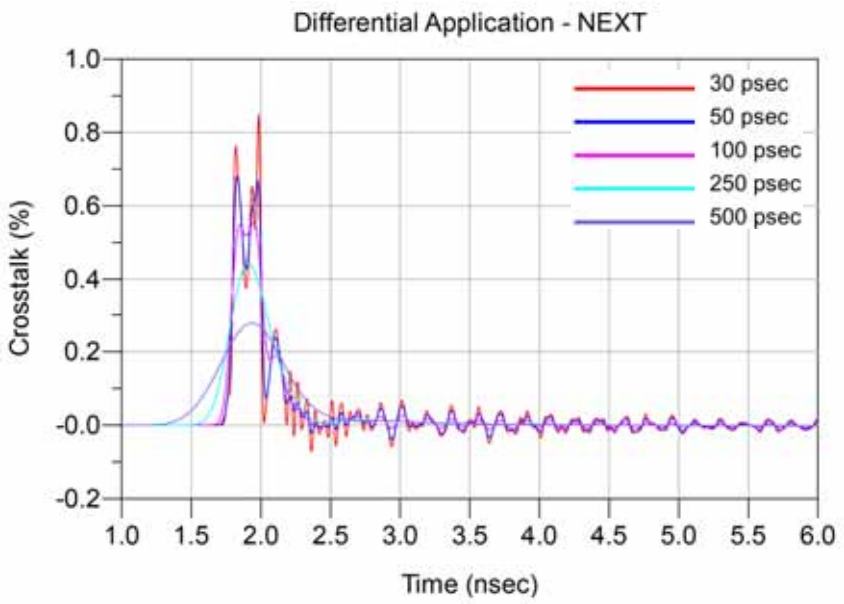


Diff Optimal Vertical Application – FEXT, SEAM8_A26,B26_SEAF8-RA_C25,D25

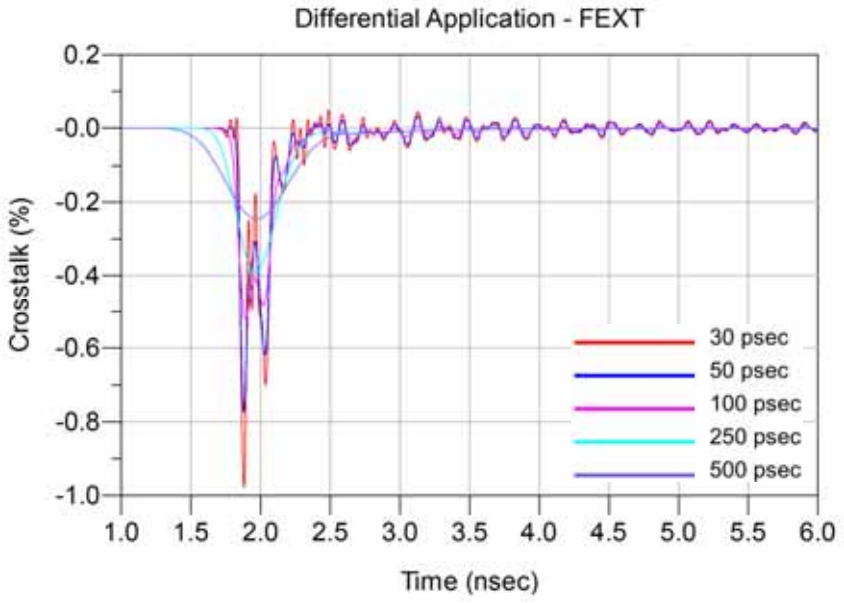


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Diff High Density Vertical Application – NEXT, SEAM8_B25,C25_SEAM8_B27,C27

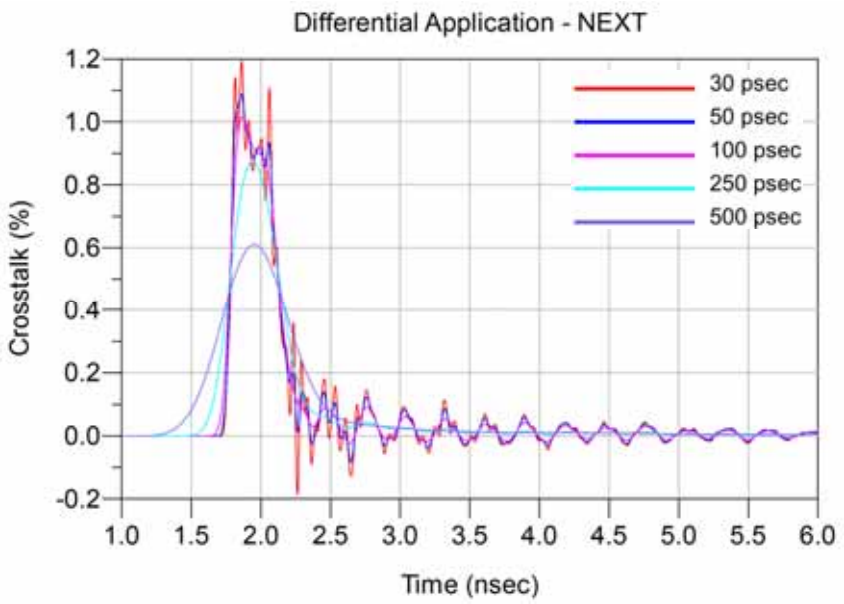


Diff High Density Vertical Application – FEXT, SEAM8_B25,C25_SEAF8-RA_B27,C27

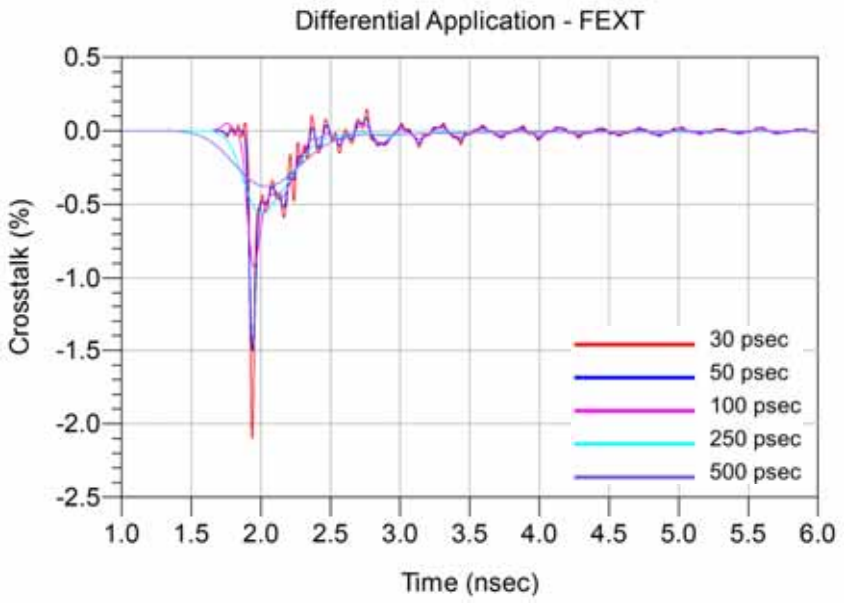


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Diff High Density Vertical Application – NEXT, SEAM8_J26,K26_SEAM8_J28,K28

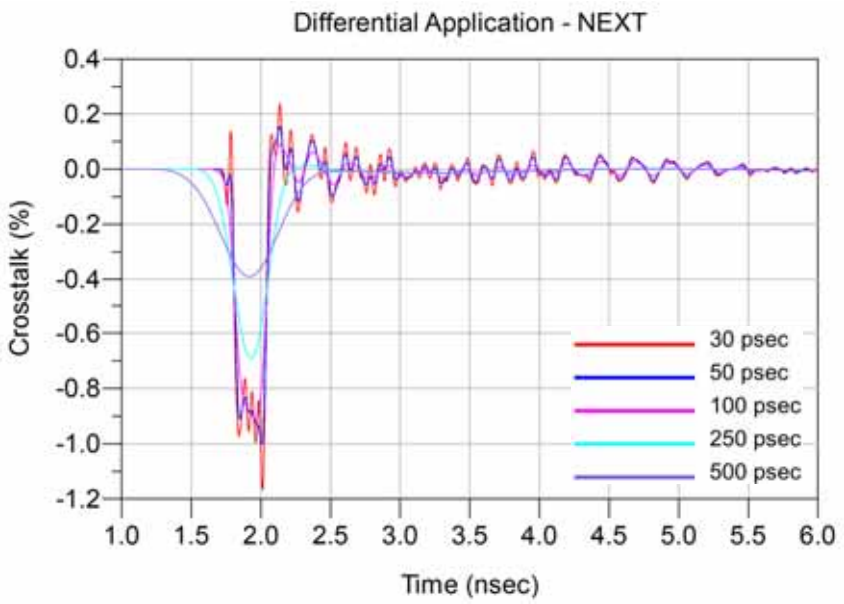


Diff High Density Vertical Application – FEXT, SEAM8_J26,K26_SEAF8-RA_J28,K28

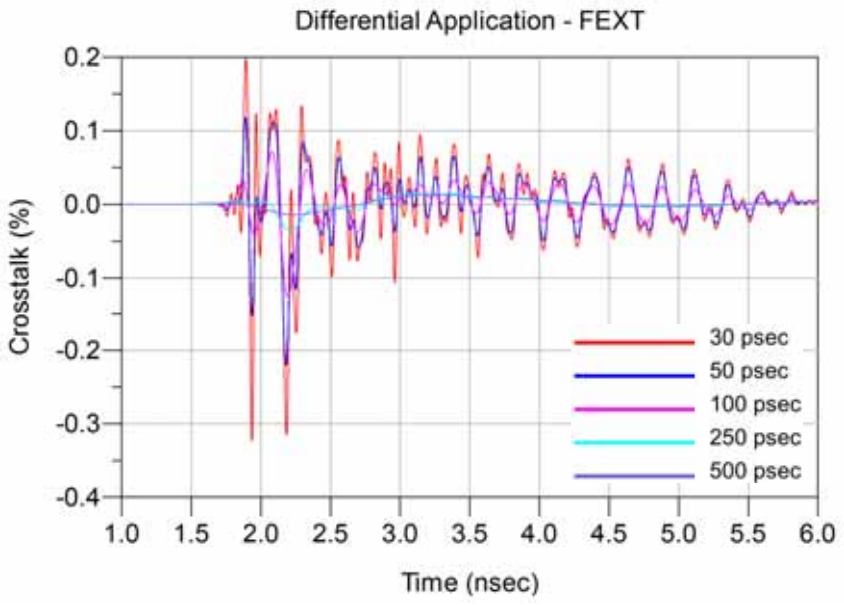


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Diff High Density Vertical Application – NEXT, SEAM8_F26,G26_SEAM8_H25,J25

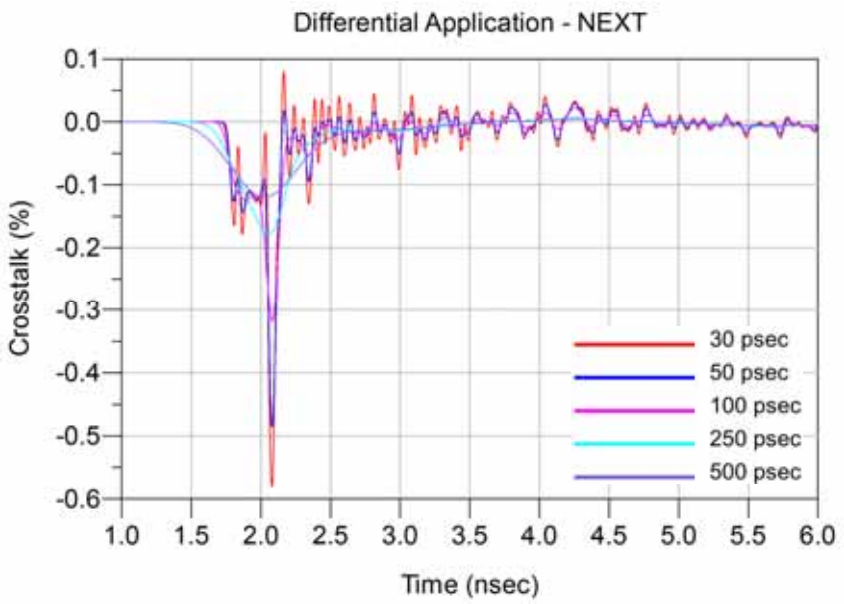


Diff High Density Vertical Application – FEXT, SEAM8_F26,G26_SEAF8-RA_H25,J25

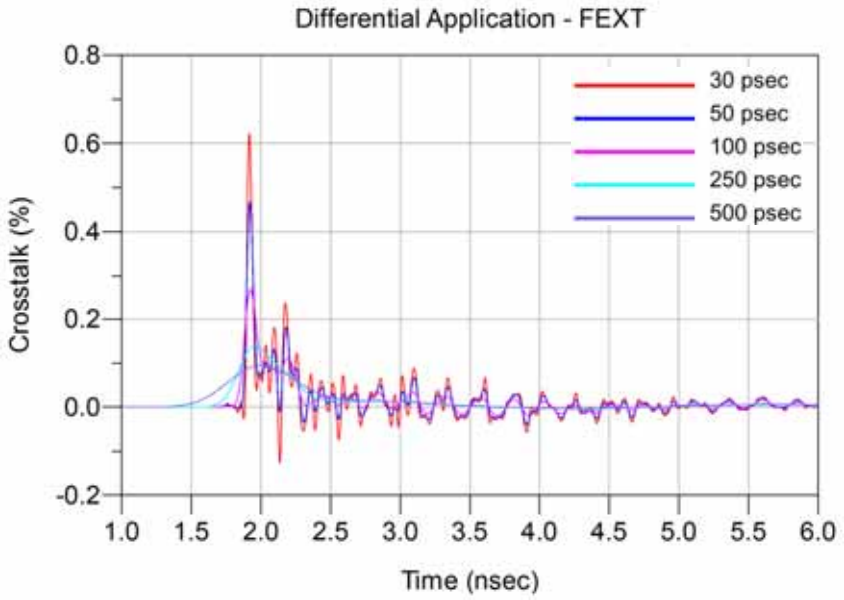


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Diff High Density Vertical Application – NEXT, SEAM8_F26,G26_SEAM8_J26,K26

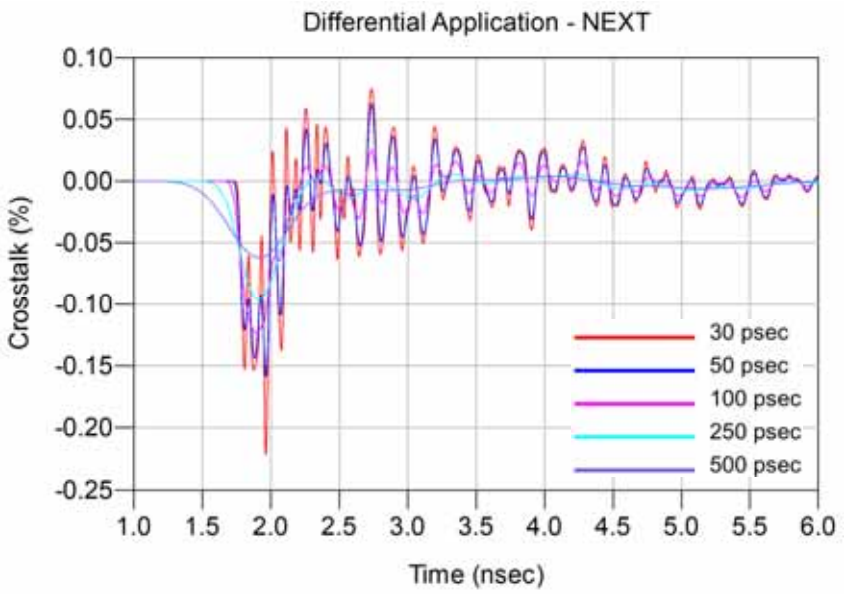


Diff High Density Vertical Application – FEXT, SEAM8_F26,G26_SEAF8-RA_J26,K26

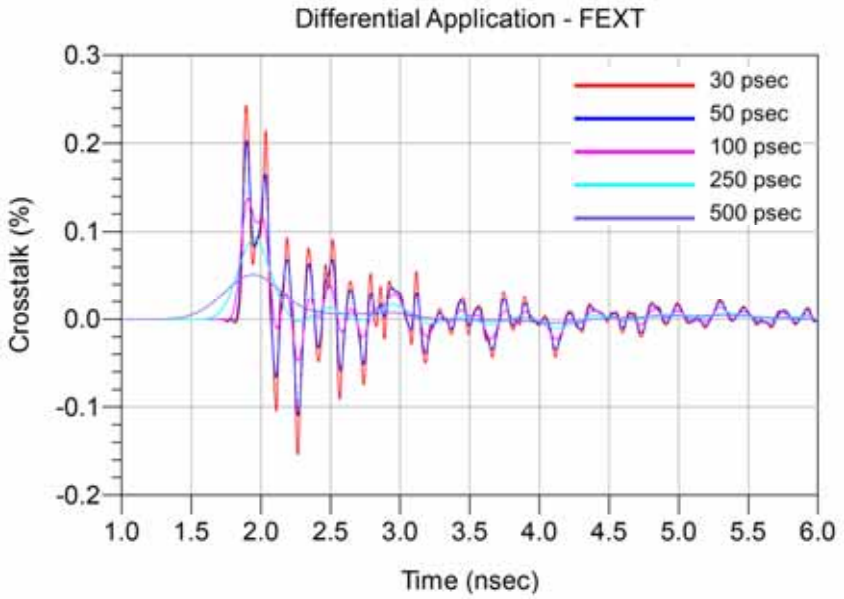


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Diff High Density Vertical Application – NEXT, SEAM8_A26,B26_SEAM8_D26,E26

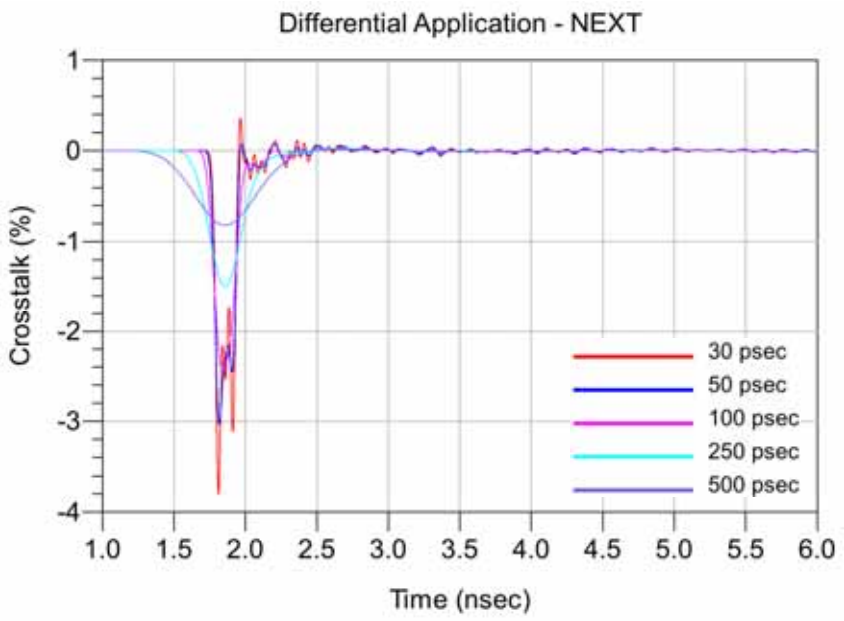


Diff High Density Vertical Application – FEXT, SEAM8_A26,B26_SEAF8-RA_D26,E26

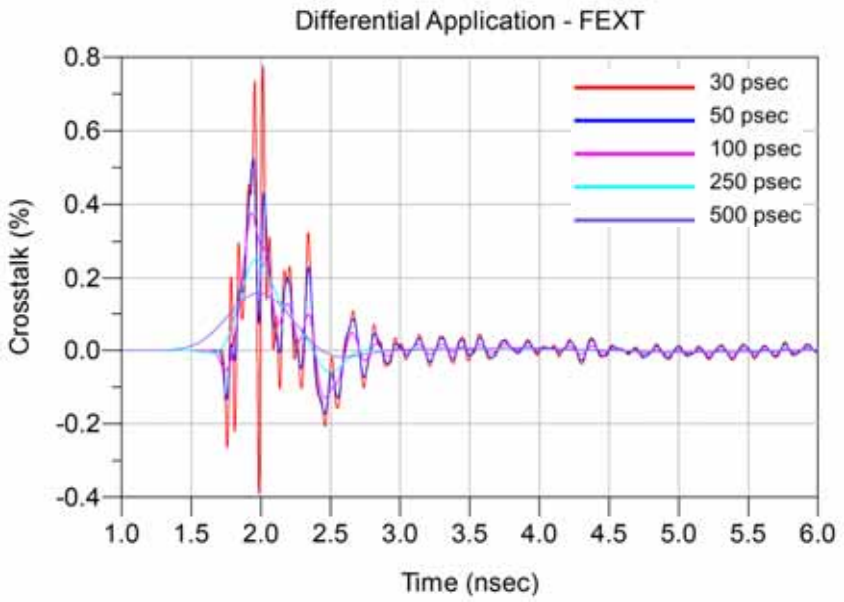


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Diff High Density Vertical Application – NEXT, SEAM8_A26,B26_SEAM8_B25,C25



Diff High Density Vertical Application – FEXT, SEAM8_A26,B26_SEAF8-RA_B25,C25



Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Appendix C – Product and Test System Descriptions

Product Description

Product test samples are SEAM8-2mm/SEAF8-RA Series connectors. The part numbers are SEAM8-50-S02.0-S-10-2-K and SEAF8-50-1-S-10-2-RA. The SEAM8-2mm/SEAF8-RA Series is an open pin field connector designed for single-ended signals with various options for differential signaling configurations. The open pin field array is 10 row providing 50 signal pins per row. A photo of the test articles mounted to SI test boards is shown below.

Test System Description

The test fixtures are composed of four-layer FR-4 material with 50Ω signal trace and pad configurations designed for the electrical characterization of Samtec high speed connector products. A PCB mount SMA connector is used to interface the VNA test cables to the test fixtures. Optimization of the SMA launch was performed using full wave simulation tools to minimize reflections. Twenty-four test fixtures are specific to the SEAM8-2mm/SEAF8-RA Series connector set and identified by part numbers PCB-107405-SIG-01A and 01B to 12A and 12B. Calibration standards specific to the SEAM-2mm/SEAF-RA Series are located on the same test boards. To keep trace lengths short, twelve different test board sets were required to access the necessary signal pins.

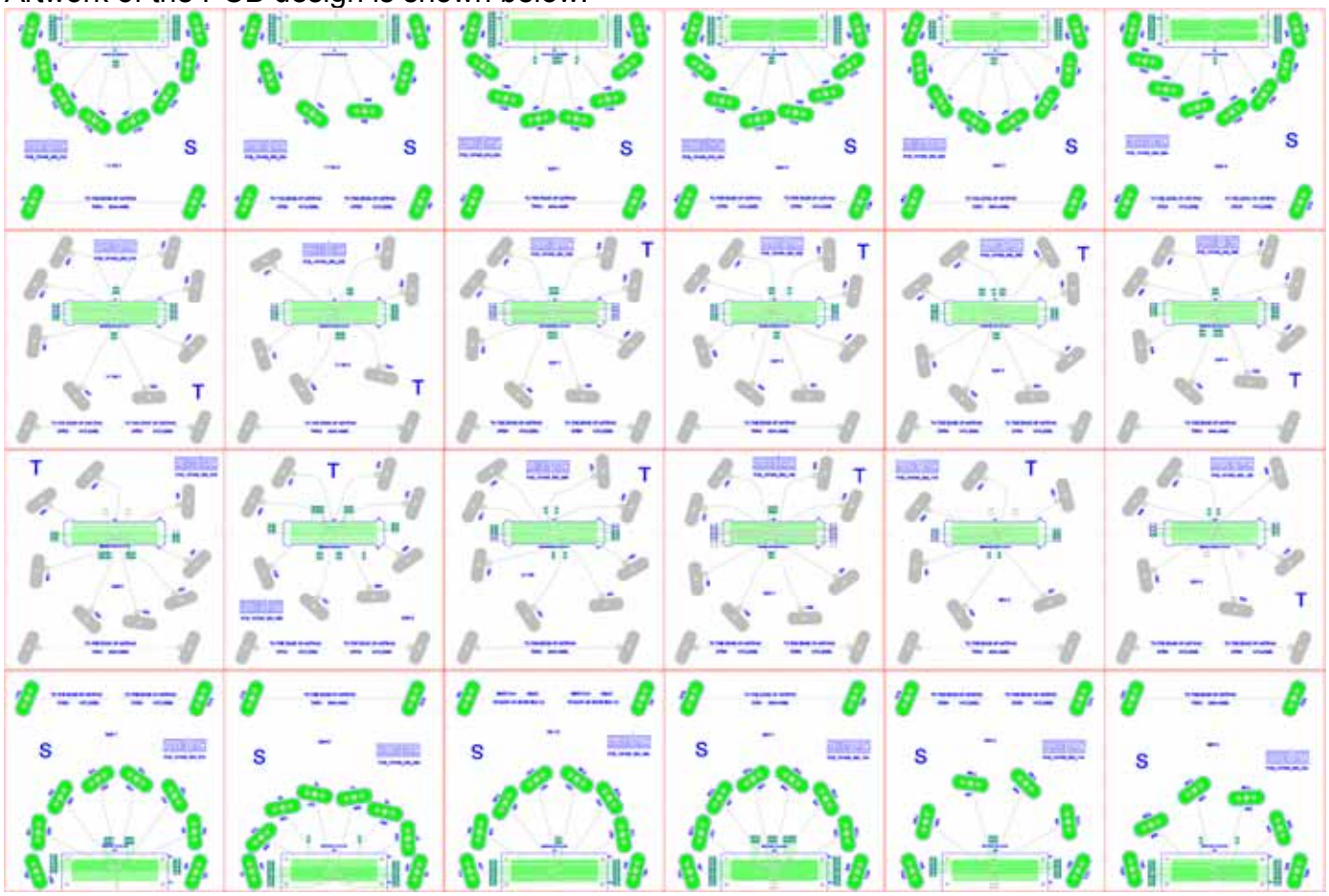
PCB-107405-SIG-XX Test Fixtures

Shown below is a photograph of one of the twelve test board sets.

Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

PCB-107405-SIG-XX PCB Layout Panel

Artwork of the PCB design is shown below.



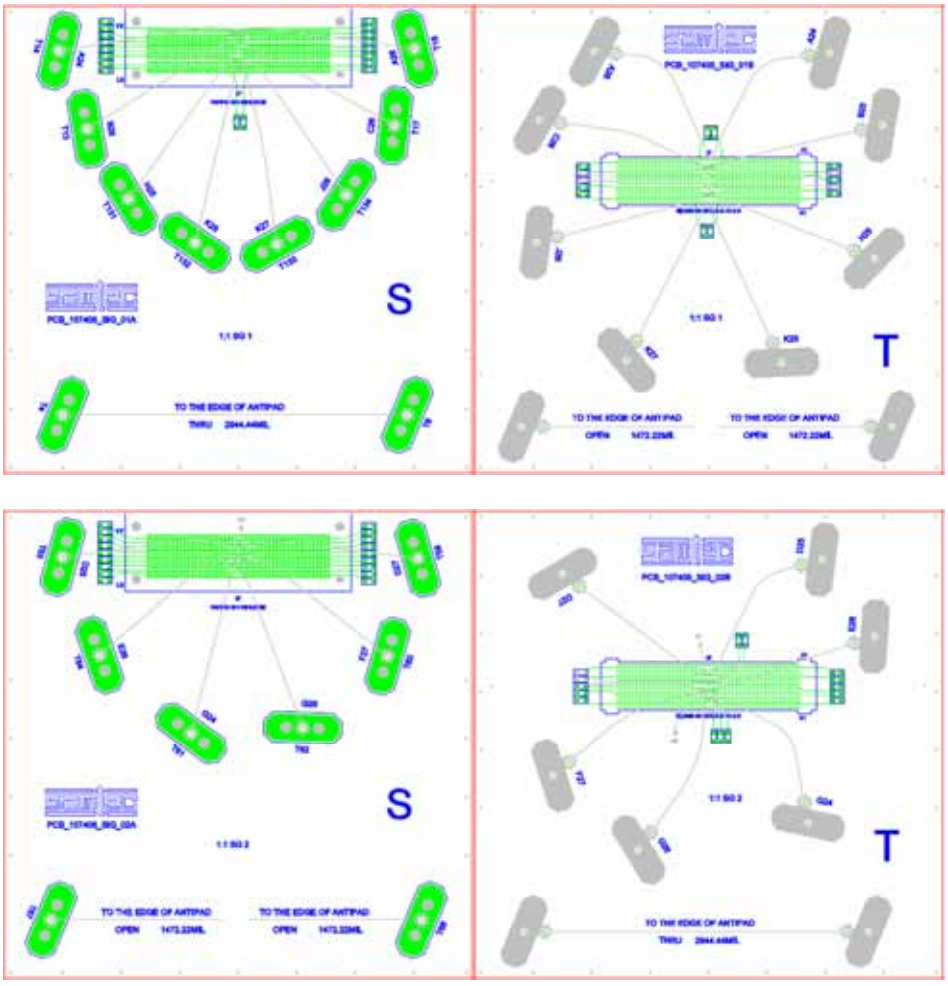
PCB Fixtures

The test fixtures used are as follows:

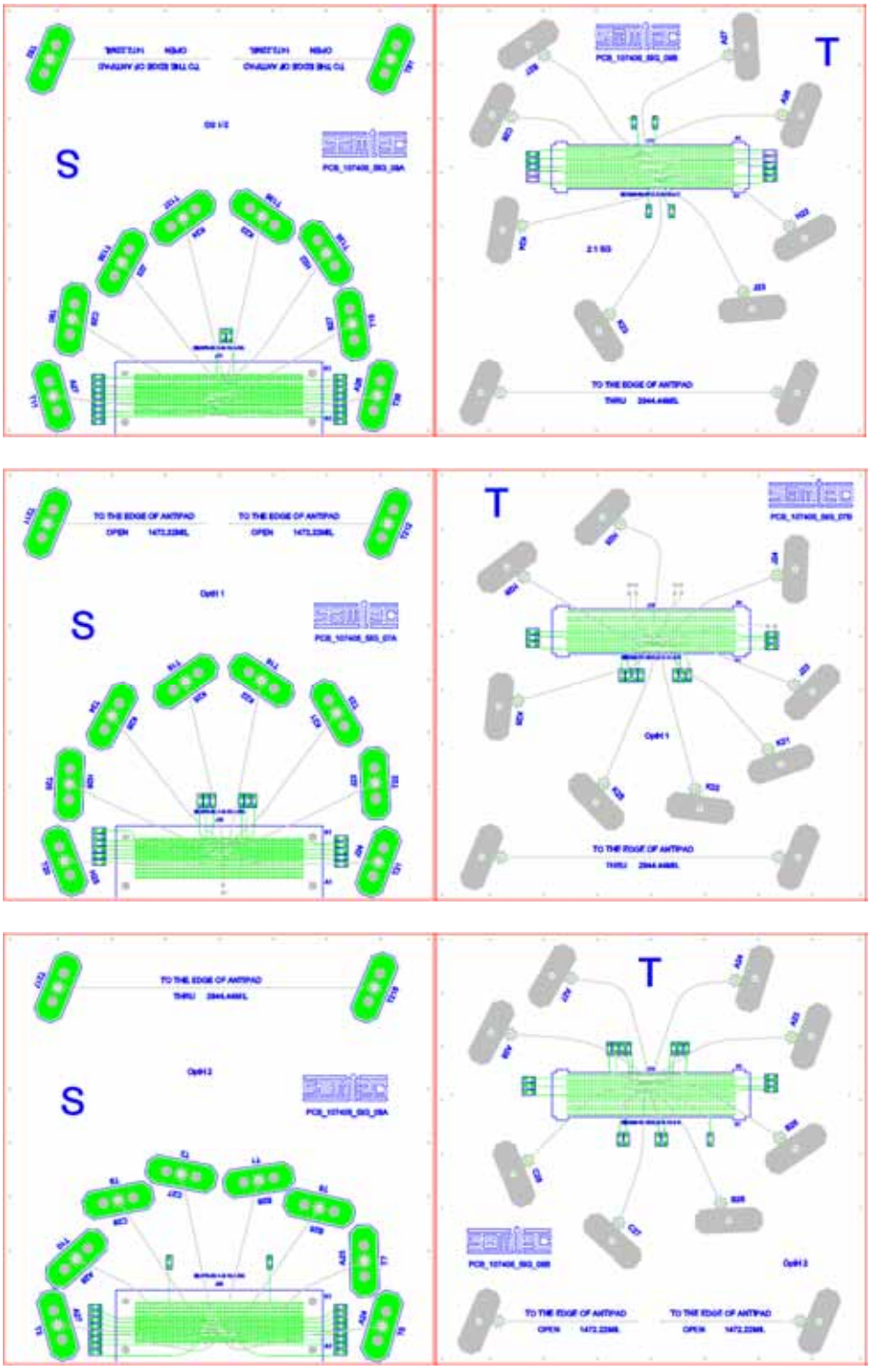
PCB-107405 -SIG-01A – SEAF8-RA Series Test Board for SE 1:1 S/G Pattern
PCB-107405 -SIG-01B – SEAM8 Series Test Board for SE 1:1 S/G Pattern
PCB-107405 -SIG-02A – SEAF8-RA Series Test Board for SE 1:1 S/G Pattern
PCB-107405 -SIG-02B – SEAM8 Series Test Board for SE 1:1 S/G Pattern
PCB-107405 -SIG-09A – SEAF8-RA Series Test Board for SE 2:1 S/G Pattern
PCB-107405 -SIG-09B – SEAM8 Series Test Board for SE 2:1 S/G Pattern
PCB-107405 -SIG-07A – SEAF8-RA Series Test Board for Differential Optimal Horizontal
PCB-107405 -SIG-07B – SEAM8 Series Test Board for Differential Optimal Horizontal
PCB-107405 -SIG-08A – SEAF8-RA Series Test Board for Differential Optimal Horizontal
PCB-107405 -SIG-08B – SEAM8 Series Test Board for Differential Optimal Horizontal

Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

PCB-107405 -SIG-03A – SEAF8-RA Series Test Board for Differential Optimal Vertical
PCB-107405 -SIG-03B – SEAM8 Series Test Board for Differential Optimal Vertical
PCB-107405 -SIG-04A – SEAF8-RA Series Test Board for Differential Optimal Vertical
PCB-107405 -SIG-04B – SEAM8 Series Test Board for Differential Optimal Vertical
PCB-107405 -SIG-05A – SEAF8-RA Series Test Board for Differential Optimal Vertical
PCB-107405 -SIG-05B – SEAM8 Series Test Board for Differential Optimal Vertical
PCB-107405 -SIG-06A – SEAF8-RA Series Test Board for Differential Optimal Vertical
PCB-107405 -SIG-06B – SEAM8 Series Test Board for Differential Optimal Vertical
PCB-107405 -SIG-10A – SEAF8-RA Series Test Board for Differential High Density Vertical
PCB-107405 -SIG-10B – SEAM8 Series Test Board for Differential High Density Vertical
PCB-107405 -SIG-11A – SEAF8-RA Series Test Board for Differential High Density Vertical
PCB-107405 -SIG-11B – SEAM8 Series Test Board for Differential High Density Vertical
PCB-107405 -SIG-12A – SEAF8-RA Series Test Board for Differential High Density Vertical
PCB-107405 -SIG-12B – SEAM8 Series Test Board for Differential High Density Vertical



Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female



Series: SEAM8/SEAF8-RA Array Series
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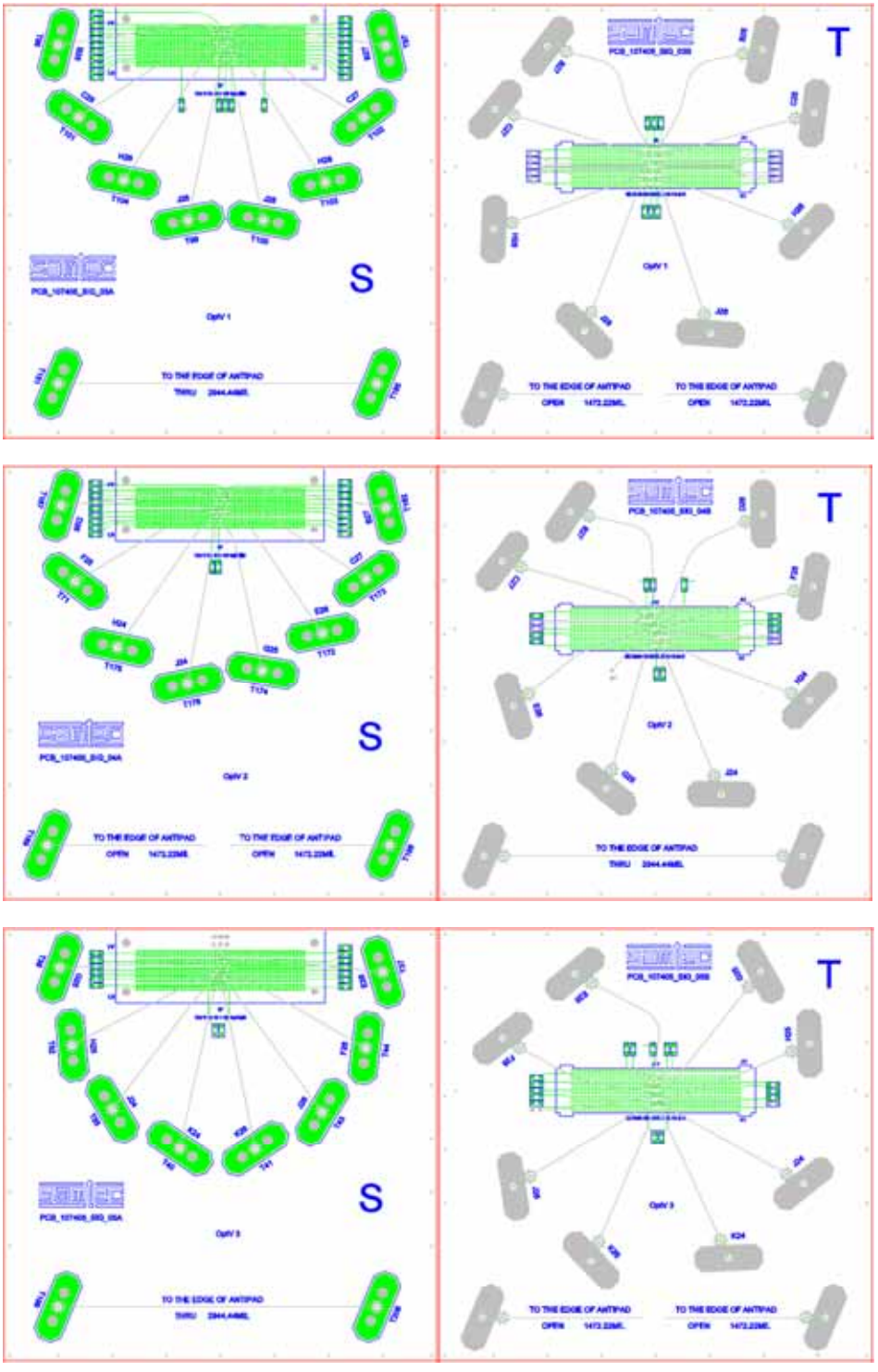

Series: SEAM8/SEAF8-RA Array Series
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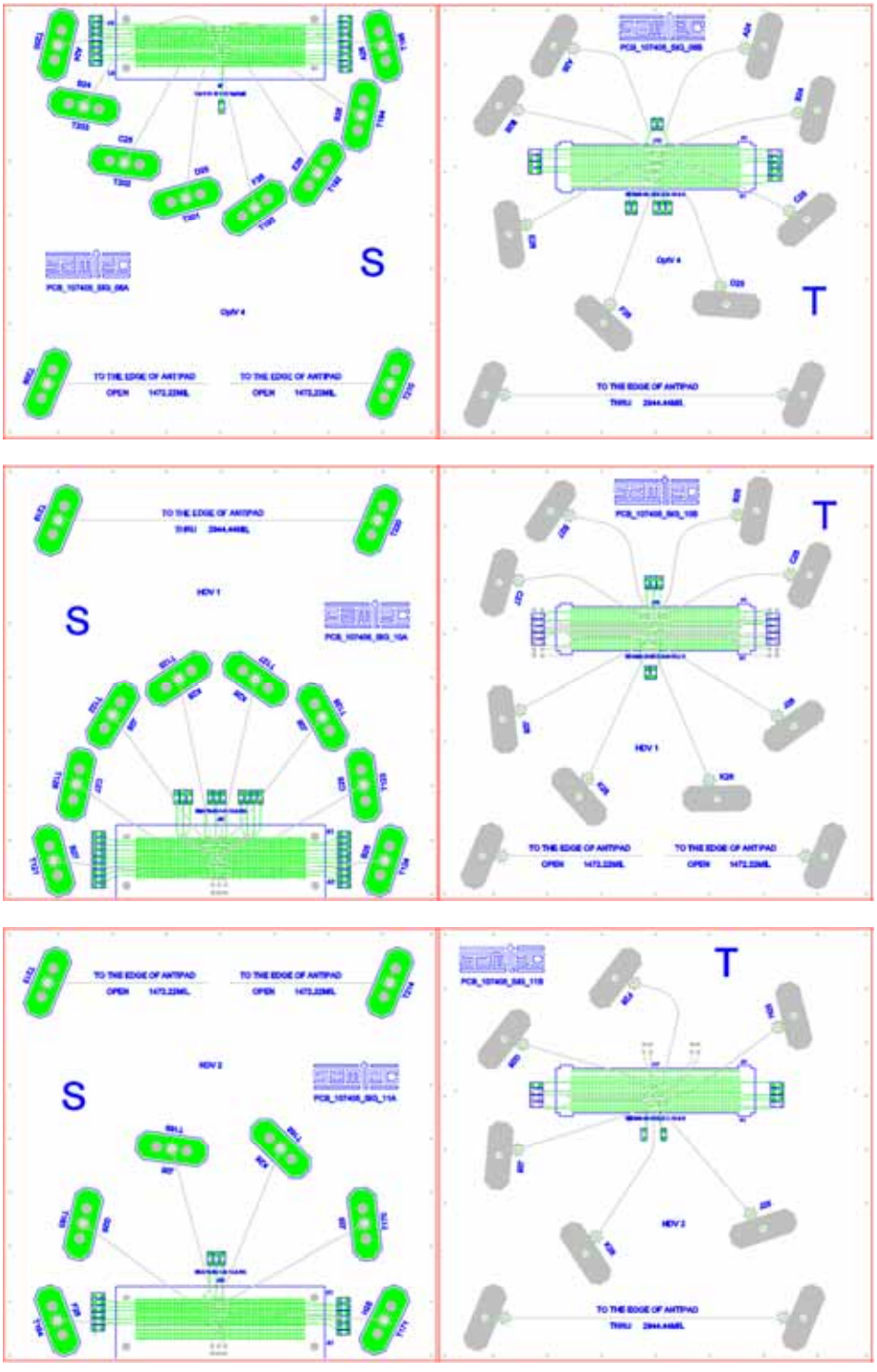
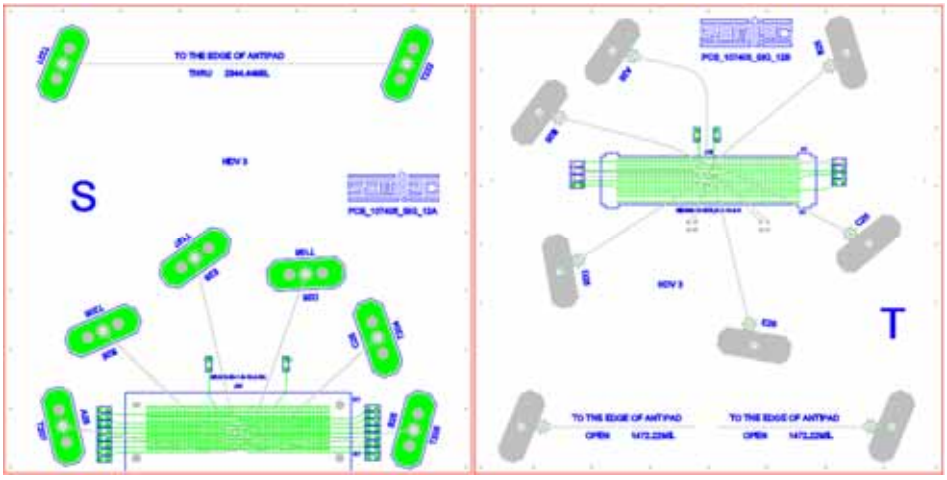
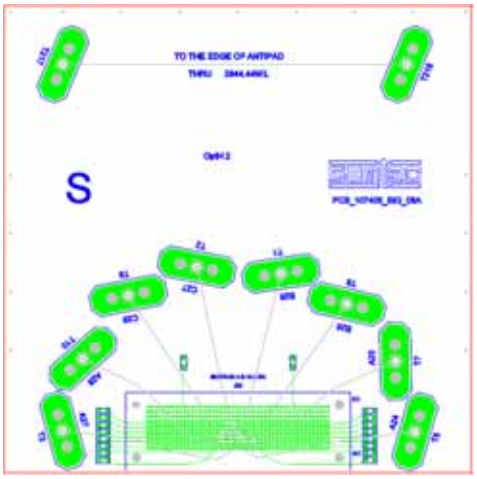


Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female



Calibration Board

Test fixture losses and test point reflections were removed from the data by use of Automatic Fixture Removal (AFR) application. The calibration standard is combined on the test boards and shown below. The measurements were performed under SOLT calibration and the test board effects were included in the measurements. AFR application extracts fixture S-parameters from 2X THRU measurement and performs de-embedding on the DUT+Fixture measurement to characterize only the DUT.



Thru line – 2944.44 mils

Series: SEAM8/SEAF8-RA Array Series
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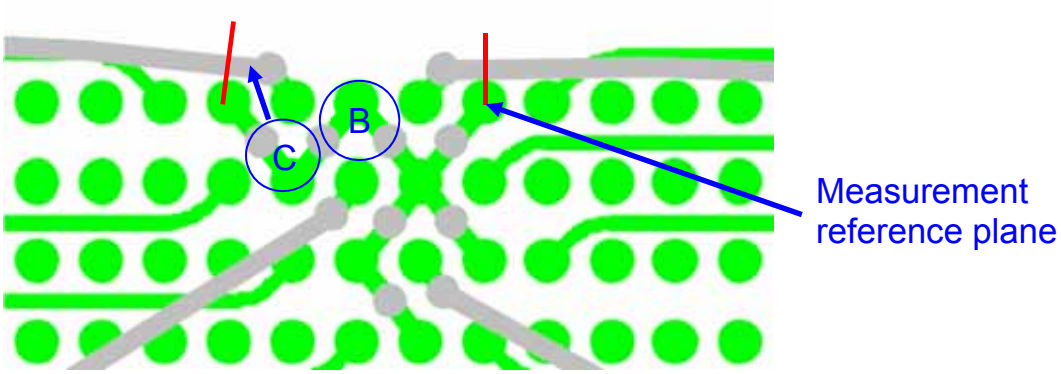
All traces on the test boards are length matched to 1.5" measured from the edge of the pad to the SMA. The AFR calibration effectively removes 1.47222" of test board trace effects. This means that 27.78 mils of test board trace length effects are included in the measurement. The S-Parameter measurement includes:

A- The SEAM8-2mm/SEAF8-RA Series connector set
B- Test board vias, pads (footprint effects)
C- 27.78 mils of 10 mil wide microstrip trace

The figure below shows the location of the measurement reference plane.



Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

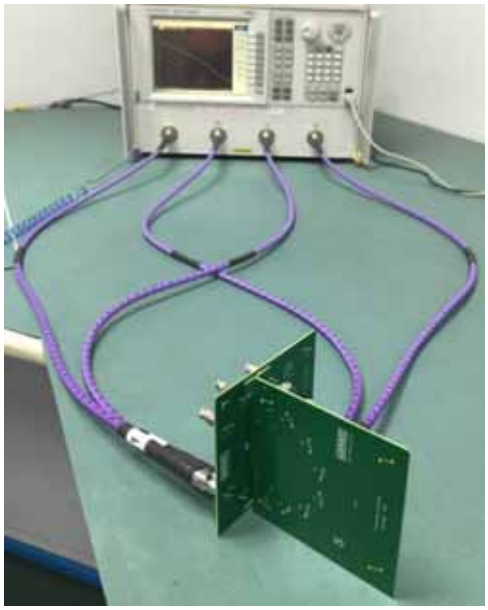
Appendix D – Test and Measurement Setup

The test instrument is the Agilent N5230C PNA-L network analyzer. Frequency domain data and graphs are obtained directly from the instrument. Post-processed time domain data and graphs are generated using convolution algorithms within Agilent ADS. The network analyzer is configured as follows:

Start Frequency – 300 KHz
Stop Frequency – 20 GHz
Number of points –1601
IFBW – 1 KHz

With these settings, the measurement time is approximately 20 seconds.

N5230C Measurement Setup



Test Instruments

QTY	Description
1	Agilent N5230C PNA-L Network Analyzer (300 KHz to 20 GHz)
1	Agilent N4433A ecal module (300 KHz to 20 GHz)

Test Cables & Adapters

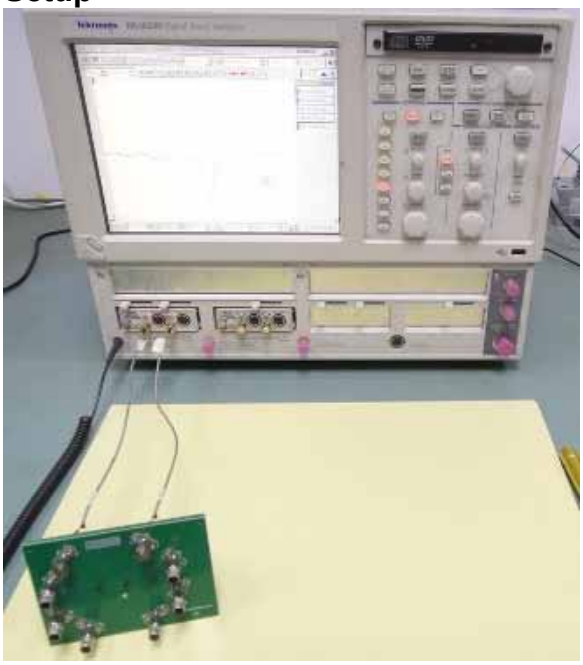
QTY	Description
4	Gore OWD01D02039-4 (DC-26.5 GHz)

Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

For impedance measurements, the test instrument is the Tektronix DSA8200 Digital Serial Analyzer mainframe and 80E04 sampling module. The impedance data and profiles are obtained directly from the instrument. The Digital Analyzer is configured as follows:

	Single-Ended Signal	Differential Signal
Vertical Scale:	5 ohm / Div:	10 ohm / Div:
Offset:	Default / Scroll	Default / Scroll
Horizontal Scale:	200ps/ Div	200ps/ Div
Record Length:	4000	4000
Averages:	≥ 16	≥ 16

DSA8200 Measurement Setup



Test Instruments

QTY	Description
1	Tektronix DSA8200 Digital Serial Analyzer
2	Tektronix 80E04 Dual Channel 20 GHz TDR Sampling Module

Test Cables & Adapters

QTY	Description
2	Samtec RF405-01SP1-01SP1-0305 (DC-20 GHz)

Series: SEAM8/SEAF8-RA Array Series
Description: 0.8mm x 0.8mm grid interconnect system, Vertical Male to Right Angle Female

Appendix E - Frequency and Time Domain Measurements

Frequency (S-Parameter) Domain Procedures

The quality of any data taken with a network analyzer is directly related to the quality of the calibration standards and the use of proper test procedures. For this reason, extreme care is taken in the design of the through calibration standards, the SI test boards, and the selection of the PCB vendor.

A coaxial SOLT calibration is performed using a N4433A ECAL module. Then DUT measurements are performed under SOLT calibration. The measurements include the effect of test fixture. The measurements of the 2X THRU line standards are required in order to remove the test fixture effect.

Time Domain Procedures

Mathematically, Frequency Domain data can be transformed to obtain a Time Domain response. Perfect transformation requires Frequency Domain data from DC to infinity Hz. Fortunately, a very accurate Time Domain response can be obtained with bandwidth-limited data, such as measured with modern network analyzer.

The Time Domain responses were generated using Agilent ADS 2011.05. This tool has a transient convolution simulator, which can generate a Time Domain response directly from measured S-Parameters. An example of a similar methodology is provided in the Samtec Technical Note on domain transformation.
http://www.samtec.com/Technical_Library/reference/articles/pdfs/tech-note_using-PLTS-for-time-domain-data_web.pdf

Propagation Delay (TDT)
The Propagation Delay is a measure of the Time Domain delay through the connector and footprint. A step pulse is applied to the touchstone model of the connector and the transmitted voltage is monitored. The same pulse is also applied to a reference channel with zero loss, and the Time Domain pulses are plotted on the same graph. The difference in time, measured at the 50% point of the step voltage is the propagation delay.

Near-End Crosstalk (TDT) & Far End Crosstalk (TDT)
A step pulse is applied to the touchstone model of the connector and the coupled voltage is monitored. The amplitude of the peak-coupled voltage is recorded and reported as a percentage of the input pulse.

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Impedance (TDR)

Measurements involving digital pulses are performed using either Time Domain Reflectometer (TDR) or Time Domain Transmission (TDT) methods. The TDR method is used for the impedance measurements in this report.

The signal line(s) of the SUT's is energized with a TDR pulse and the far-end of the energized signal line is terminated in the test systems characteristic impedance (e.g.; 50Ω or 100Ω terminations). By terminating the adjacent signal lines in the test systems characteristic impedance, the effects on the resultant impedance shape of the waveform is limited. The "best case" signal mapping was tested and is presented in this report.

Series: SEAM8/SEAF8-RA Array Series
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Appendix F – Glossary of Terms

ADS – Advanced Design Systems
BC – Best Case crosstalk configuration
DUT – Device under test, term used for TDA IConnect & Propagation Delay waveforms
FD – Frequency domain
FEXT – Far-End Crosstalk
GSG – Ground–Signal-Ground; geometric configuration
GSSG - Ground–Signal-Signal-Ground; geometric configuration
HDV – High Density Vertical
NEXT – Near-End Crosstalk
OV – Optimal Vertical
OH – Optimal Horizontal
PCB – Printed Circuit Board
PPO – Pin Population Option
SE – Single-Ended
SI – Signal Integrity
SUT – System Under Test
S – Static (independent of PCB ground)
SOLT – acronym used to define Short, Open, Load & Thru Calibration Standards
TD – Time Domain
TDA – Time Domain Analysis
TDR – Time Domain Reflectometry
TDT – Time Domain Transmission
WC – Worst Case crosstalk configuration
Z – Impedance (expressed in ohms)